



**Australian Government**

# **AUR12 Automotive Industry Retail, Service and Repair Training Package**

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<b>MEM07005C Perform general machining .....</b>	<b>7271</b>
<b>MEM09002B Interpret technical drawing .....</b>	<b>7281</b>
<b>MEM12023A Perform engineering measurements .....</b>	<b>7288</b>
<b>MEM18001C Use hand tools .....</b>	<b>7296</b>
<b>MEM18002B Use power tools/hand held operations.....</b>	<b>7303</b>
<b>MEM18028B Maintain engine lubrication systems.....</b>	<b>7310</b>
<b>MEM24001B Perform basic penetrant testing.....</b>	<b>7318</b>
<b>MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment.....</b>	<b>7327</b>
<b>MSAENV272B Participate in environmentally sustainable work practices .....</b>	<b>7334</b>
<b>MSAENV472B Implement and monitor environmentally sustainable work practices ..</b>	<b>7343</b>
<b>MSAENV672B Develop workplace policy and procedures for environmental sustainability</b>	<b>7353</b>
<b>MSFGG2005 Apply basic glass handling .....</b>	<b>7362</b>
<b>Assessment Requirements for MSFGG2005 Apply basic glass handling.....</b>	<b>7367</b>
<b>MSFGG3001 Store and handle glass.....</b>	<b>7369</b>
<b>Assessment Requirements for MSFGG3001 Store and handle glass .....</b>	<b>7374</b>

<b>MSFUP3001 Apply traditional foundations to upholstered furniture .....</b>	<b>7376</b>
<b>Assessment Requirements for MSFUP3001 Apply traditional foundations to upholstered furniture .....</b>	<b>7381</b>
<b>MSS403030A Improve cost factors in work practices .....</b>	<b>7383</b>
<b>PSPTRAN501A Provide specialist vehicle technical advice .....</b>	<b>7390</b>
<b>RIICOM201D Communicate in the workplace.....</b>	<b>7397</b>
<b>Assessment Requirements for RIICOM201D Communicate in the workplace .....</b>	<b>7400</b>
<b>RIIHAN301D Operate elevating work platform .....</b>	<b>7403</b>
<b>Assessment Requirements for RIIHAN301D Operate elevating work platform.....</b>	<b>7406</b>
<b>RIIQUA201D Maintain and monitor site quality standards .....</b>	<b>7410</b>
<b>Assessment Requirements for RIIQUA201D Maintain and monitor site quality standards.....</b>	<b>7413</b>
<b>RIIRIS201D Conduct local risk control.....</b>	<b>7416</b>
<b>Assessment Requirements for RIIRIS201D Conduct local risk control .....</b>	<b>7419</b>
<b>RIIWS201D Work safely and follow WHS policies and procedures.....</b>	<b>7423</b>
<b>Assessment Requirements for RIIWS201D Work safely and follow WHS policies and procedures .....</b>	<b>7426</b>
<b>RIIWS204D Work safely at heights .....</b>	<b>7430</b>
<b>Assessment Requirements for RIIWS204D Work safely at heights.....</b>	<b>7433</b>
<b>SIRXCCS201 Apply point-of-sale handling procedures.....</b>	<b>7437</b>
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<b>SITXADM004A Plan and manage meetings .....</b>	<b>7514</b>
<b>TAEDEL301A Provide work skill instruction .....</b>	<b>7521</b>
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<b>TLIA2012A Pick and process orders .....</b>	<b>7538</b>
<b>TLIA2013A Receive goods.....</b>	<b>7546</b>
<b>TLIA2020A Replenish stock.....</b>	<b>7554</b>
<b>TLIA3039A Receive and store stock.....</b>	<b>7562</b>
<b>TLIA4005A Check and evaluate records and documentation.....</b>	<b>7570</b>
<b>TLIA5058A Manage facility and inventory requirements .....</b>	<b>7577</b>
<b>TLID1001A Shift materials safely using manual handling methods.....</b>	<b>7584</b>
<b>TLID2004A Load and unload goods/cargo .....</b>	<b>7592</b>
<b>TLID2013A Move materials mechanically using automated equipment.....</b>	<b>7600</b>
<b>TLID3011A Conduct specialised forklift operations .....</b>	<b>7607</b>
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<b>TLILIC2001A Licence to operate a forklift truck.....</b>	<b>7623</b>

# AUR12 Automotive Industry Retail, Service and Repair Training Package

## Modification History

Version	Release Date	Comments
2.1	January 2015	<p><b>ISC Upgrade</b></p> <p>Two revised qualifications</p> <ul style="list-style-type: none"> <li>• AUR20712 Certificate II in Vocational Preparation</li> <li>• AUR21812 Certificate II in Automotive Steering and Suspension</li> </ul> <p>Three qualifications removed:</p> <ul style="list-style-type: none"> <li>• AUR30512 Certificate III in Marine Mechanical Technology</li> <li>• AUR31112 Certificate IV in Heavy Commercial Vehicle Mechanical Technology</li> <li>• AUR40512 Certificate IV in Vehicle Loss Assessing</li> </ul> <p>One revised unit:</p> <ul style="list-style-type: none"> <li>• AURTTA1001 Remove and tag steering, suspension and brake system components</li> </ul> <p>Eleven units removed:</p> <ul style="list-style-type: none"> <li>• AURVLA4001 Identify and report vehicle claim fraud indicators</li> <li>• AURVNA4001 Provide vehicle loss assessment and identify repair requirements</li> <li>• AURVNA4002 Provide vehicle total loss assessment</li> <li>• AURVNA4003 Review a vehicle repair quotation</li> <li>• AURVNA4004 Apply insurance industry knowledge to vehicle loss assessment</li> <li>• AURVNA4005 Inspect quality of vehicle repair work</li> <li>• AURVNA4006 Identify and value vehicle salvage</li> <li>• AURVNA4007 Apply automotive mechanical and electrical knowledge to vehicle loss assessment</li> <li>• AURVNA4008 Apply automotive body and paint knowledge to vehicle loss assessment</li> <li>• AURVNN4001 Evaluate vehicle bodywork for damage and identify repair requirements</li> <li>• AURVNP4001 Evaluate vehicle paintwork for damage and identify refinish requirements</li> </ul>

		<p>Twenty new imported units</p> <ul style="list-style-type: none"> <li>• AURAF009 Carry out research into the automotive industry</li> <li>• AURETK003 Operate electrical test equipment</li> <li>• AURETR046 Remove and refit vehicle batteries</li> <li>• AURETR047 Recharge vehicle batteries</li> <li>• AURETR048 Construct and test basic electronic circuits</li> <li>• AURTTA027 Carry out basic vehicle servicing operations</li> <li>• AURTTB007 Remove and replace brake assemblies</li> <li>• AURTTT004 Remove and replace radiators</li> <li>• AURTTD006 Remove and replace vehicle front suspension springs</li> <li>• AURTTD007 Remove and replace steering assemblies</li> <li>• AURTTE006 Remove and replace conventional engine assemblies</li> <li>• AURTTE007 Dismantle and assemble single cylinder four-stroke petrol engines</li> <li>• AURTTE008 Dismantle and assemble multi-cylinder four-stroke petrol engines</li> <li>• AURTTE009 Remove and replace engine cylinder heads</li> <li>• AURTTJ003 Remove and replace wheel and tyre assemblies</li> <li>• AURTTX012 Dismantle and assemble conventional manual transmissions</li> <li>• AURTTX013 Remove and replace clutch assemblies</li> <li>• AURVTA005 Clean vehicles</li> <li>• AURVTP029 Prepare surface and prime repaired body panels</li> <li>• AURVTW010 Set up and use welding equipment</li> </ul> <p>Seventeen superseded units replaced:</p> <ul style="list-style-type: none"> <li>• BSBHRM505B replaces BSBHRM505A</li> <li>• MSFGG2005 replaces LMFGG2005C</li> <li>• MSFGG3001 replaces LMFGG3001C</li> <li>• MSFUP3001 replaces LMFUP3001B</li> <li>• RIICOM201D replaces RIICOM201A</li> <li>• RIIHAN301D replaces RIIHAN301B</li> <li>• RIIWHS201D replaces RIIOHS201A</li> <li>• RIIWHS204D replaces RIIOHS204A</li> <li>• RIIQUA201D replaces RIIQUA201A</li> </ul>
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		<ul style="list-style-type: none"> <li>• RIIRIS201D replaces RIIRIS201B</li> <li>• AURVNN001 replaces AURANN4001</li> <li>• AURNVA005 replaces AURNVA4005</li> <li>• AURVNA003 replaces AURVNA4003</li> <li>• AURVNA007 replaces AURVNA4007</li> <li>• AURVNA008 replaces AURVNA4008</li> <li>• AURVNN001 replaces AURVNN4001</li> <li>• AURVNP001 replaces AURVNP4001</li> </ul>
2	January 2014	<p><b>NSSC endorsement:</b></p> <p>Two revised qualifications:</p> <ul style="list-style-type: none"> <li>• AUR21913 Certificate II in Tyre Servicing Technology</li> <li>• AUR30713 Certificate III in Outdoor Power Equipment</li> </ul> <p><b>ISC Upgrade</b></p> <p>Five revised qualifications:</p> <ul style="list-style-type: none"> <li>• AUR32112 Certificate III in Automotive Body Repair Technology</li> <li>• AUR32212 Certificate III in Automotive Glazing Technology</li> <li>• AUR32312 Certificate III in Automotive &amp; Marine Trimming Technology</li> <li>• AUR40712 Certificate IV in Automotive Body Repair Technology</li> <li>• AUR50112 Diploma of Automotive Management</li> </ul> <p>Three revised skill sets:</p> <ul style="list-style-type: none"> <li>• AURSS00011 Battery Electric Vehicle Diagnosis and Repair Skill Set</li> <li>• AURSS00012 Battery Electric Vehicle Inspection and Servicing Skill Set</li> <li>• AURSS00014 Hybrid Electric Vehicle Inspection and Servicing Skill Set</li> </ul> <p>Six superseded units replaced:</p> <p>AUMABA002 replaces AUMABA3002  AUMAMM001 replaces AUMAMM3001  AUMGTG001 replaces AUMGTG3001  AUMGTS004 replaces AUMGTS3004  AUMGTY002 replaces AUMGTY3002  BSBCUS501C replaces BSBCUS501A</p>

1.1	August 2013	<p><b>Changes between this training package (AUR12 Version 1.1) and previously endorsed training package (AUR12 Version 1)</b></p> <p>6 revised AUR qualifications:</p> <p>AUR20712 Certificate II in Automotive Vocational Preparation</p> <p>AUR30912 Certificate III in Motorsport Technology</p> <p>AUR31012 Certificate III in Automotive Sales</p> <p>AUR32212 Certificate III in Automotive Glazing Technology</p> <p>AUR40312 Certificate IV in Motorsport Technology</p> <p>AUR50112 Diploma of Automotive Management</p> <p>AUR50312 Diploma in Motorsport Technology</p> <p>3 revised AUR units:</p> <p>AURJTD3004 Diagnose and repair motorcycle steering systems</p> <p>AURLTF3001 Diagnose and repair mechanical fuel injection systems</p> <p>AURTTA2010 Service and repair trailers up to 4.5 tonnes</p> <p>4 revised skills sets:</p> <p>AURSS00018 Vehicle Air conditioning Install and Overhaul Skill Set</p> <p>AURSS00019 Vehicle Air Conditioning Installation Skill Set</p> <p>AURSS00020 Vehicle Air Conditioning Overhaul Skill Set</p> <p>AURSS00021 Vehicle Air Conditioning Service, Retrofit and Repair Skill Set</p> <p>3 new skill sets:</p> <p>AURSS00023 Advanced Body Repair Skill Set</p> <p>AURSS00024 Advanced Body Repair Welding Skill Set</p> <p>AURSS00025 Advanced Vehicle Refinishing Skill Set</p> <p>6 imported units updated:</p> <p>BSBHRM402A Recruit, select and induct staff superseded by BSBHRM405A Support the recruitment, selection and induction of staff</p> <p>BSBSLS402A Identify sales prospects superseded by BSBSLS407A Identify and plan sales prospects</p> <p>BSBSLS403A Present a sales solution superseded by BSBSLS408A Present, secure and support sales solutions</p> <p>2 imported units removed:</p> <p>BSBSLS404A Secure prospect commitment</p> <p>BSBSLS405A Support post sale activities</p> <p><b>Refer to the mapping for further information</b></p>
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1	January 2013	<p><b>Changes between this training package (AUR12) and previously endorsed training package (AUR05)</b></p> <p>54 new AUR qualifications</p> <p>2 revised AUR qualifications</p> <p>4 AUR qualifications removed</p> <p>94 new AUR units of competency</p> <p>489 revised AUR units of competency</p> <p>6 AUR units removed</p> <p>35 unchanged AUR units of competency</p> <p>16 new AUR Skill Sets</p> <p>3 unchanged AUR Skill Sets</p> <p>Adoption of new numbering system for the AUR Training Package</p> <p>Recoding of all units of competency to conform with the Training Package Development Handbook</p> <p><b>Refer to the mapping for further information</b></p>
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# Imprint

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## Preliminary Information

### Important Note to Users

Training Packages are not static documents; they are amended periodically to reflect the latest industry practices and are version controlled. It is essential that the latest version is always used.

### Check the version number before commencing training or assessment

This Training Package is Version 2.1 – check whether this is the latest version by going to the National Training Information Service ([www.ntis.gov.au](http://www.ntis.gov.au)) and locating information about the Training Package. Alternatively, contact Auto Skills Australia [Website](http://www.autoskillsaustralia.com.au) (<http://www.autoskillsaustralia.com.au>) to confirm the latest version number.

### Explanation of version number conventions

The primary release Training Package is Version 1. When changes are made to a Training Package, sometimes the version number is changed and sometimes it is not, depending on the extent of the change. When a Training Package is reviewed it is considered to be a new Training Package for the purposes of version control, and is Version 1. Do not confuse the version number with the Training Package's national code (which remains the same during its period of endorsement).

### Explanation of the review date

The review date (shown on the title page and in the footer of each page) indicates when the Training Package is expected to be reviewed in the light of changes such as changing technologies and circumstances. The review date is not an expiry date. Endorsed Training Packages and their components remain current until they are reviewed or replaced.

### Version modification history

The version details of this endorsed Training Package are in the table below. The latest information is at the top of the table.

Version	Release Date	Comments
Version 2	2014	New Release

### Summary of AQF qualifications in Automotive Industry Retail, Service and Repair Training Package

Code	Title
AUR10112	Certificate I in Automotive Vocational Preparation
AUR20112	Certificate II in Automotive Administration
AUR20212	Certificate II in Automotive Air Conditioning Technology
AUR20312	Certificate II in Bicycle Mechanical Technology
AUR20412	Certificate II in Automotive Electrical Technology

<b>Code</b>	<b>Title</b>
AUR20512	Certificate II in Automotive Servicing Technology
AUR20612	Certificate II in Marine Mechanical Technology
AUR20712	Certificate II in Automotive Vocational Preparation
AUR20812	Certificate II in Outdoor Power Equipment Technology
AUR20912	Certificate II in Automotive Body Repair Technology
AUR21012	Certificate II in Motorsport Technology
AUR21112	Certificate II in Automotive Sales
AUR21212	Certificate II in Automotive Underbody Technology
AUR21312	Certificate II in Automotive Braking System Technology
AUR21412	Certificate II in Automotive Cooling System Technology
AUR21512	Certificate II in Automotive Cylinder Head Reconditioning
AUR21612	Certificate II in Automotive Driveline System Technology
AUR21712	Certificate II in Automotive Exhaust System Technology
AUR21812	Certificate II in Automotive Steering and Suspension System Technology
AUR21913	Certificate II in Automotive Tyre Servicing Technology
AUR30112	Certificate III in Automotive Administration
AUR30212	Certificate III in Bicycle Workshop Operations
AUR30312	Certificate III in Automotive Electrical Technology
AUR30412	Certificate III in Agricultural Mechanical Technology
AUR30612	Certificate III in Light Vehicle Mechanical Technology
AUR30713	Certificate III in Outdoor Power Equipment Technology
AUR30812	Certificate III in Motorcycle Mechanical Technology
AUR30912	Certificate III in Motorsport Technology
AUR31012	Certificate III in Automotive Sales

<b>Code</b>	<b>Title</b>
AUR31212	Certificate III in Mobile Plant Technology
AUR31312	Certificate III in Automotive Engine Reconditioning
AUR31412	Certificate III in Automotive Diesel Fuel Technology
AUR31512	Certificate III in Automotive Diesel Engine Technology
AUR31612	Certificate III in Automotive Drivetrain Technology
AUR31712	Certificate III in Forklift Technology
AUR31812	Certificate III in Heavy Commercial Trailer Technology
AUR31912	Certificate III in Elevating Work Platform Technology
AUR32012	Certificate III in Automotive Alternative Fuel Technology
AUR32112	Certificate III in Automotive Body Repair Technology
AUR32212	Certificate III in Automotive Glazing Technology
AUR32312	Certificate III in Automotive and Marine Trimming Technology
AUR32412	Certificate III in Automotive Refinishing Technology
AUR32512	Certificate III in Automotive Underbody Technology
AUR40112	Certificate IV in Automotive Management
AUR40212	Certificate IV in Automotive Mechanical Diagnosis
AUR40312	Certificate IV in Motorsport Technology
AUR40412	Certificate IV in Automotive Performance Enhancement
AUR40612	Certificate IV in Automotive Electrical Technology
AUR40712	Certificate IV in Automotive Body Repair Technology
AUR40812	Certificate IV in Automotive Mechanical Overhauling
AUR50112	Diploma of Automotive Management
AUR50212	Diploma of Automotive Technology
AUR50312	Diploma of Motorsport Technology

## Summary of Units of Competency in Automotive Industry Retail, Service and Repair Training Package and their Pre-Requisite Requirements

Unit code	Unit title	Pre-requisites
<b>Common - Administration</b>		
AURAAA2001	Work in an automotive administration environment	
AURAAA4002	Determine retail rates for work	
<b>Common – Sales and Marketing</b>		
AURACA2001	Establish relations with customers	
AURACA3002	Establish customer requirements of a complex nature	
AURACA3003	Build customer relations	
<b>Common - Environment</b>		
AURAEA1001	Identify environmental requirements in an automotive workplace	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry	
AURAEA4004	Manage environmental compliance in an automotive workplace	
<b>Common - Foundation Skills</b>		
AURAF2001	Use numbers in an automotive workplace	
AURAF2002	Read in an automotive workplace	
AURAF2003	Communicate effectively in an automotive workplace	
AURAF2004	Solve routine problems in an automotive workplace	
AURAF2005	Write routine texts in an automotive workplace	
AURAF3008	Read and apply automotive repair instructions	
AURAF5006	Prepare technical reports	

Unit code	Unit title	Pre-requisites
AURAF5007	Develop and document specifications and procedures	
<b>Common - Information Technology</b>		
AURAKA2001	Use information technology systems	
AURAKA3002	Adapt work processes to new technologies	
<b>Common - Regulatory or Legal</b>		
AURALA3001	Determine legal aspects of an automotive service and repair contract	
<b>Common - Management, Leadership and Supervision</b>		
AURAMA2001	Work effectively with others	
AURAMA2002	Communicate business information	
AURAMA3003	Conduct information sessions	
AURAMA3004	Maintain business image	
AURAMA4005	Manage complex customer issues	
AURAMA5006	Contribute to business improvement	
<b>Common - Loss Assessment or Repair Quoting - Body</b>		
AURANN4001	Prepare a vehicle repair quotation	
<b>Common - Quality</b>		
AURAQA2001	Contribute to quality work outcomes	
AURAQA3002	Inspect technical quality of work	
AURAQA3003	Maintain quality systems	
<b>Common - Health and Safety</b>		
AURASA1001	Apply automotive workplace safety fundamentals	
AURASA2002	Apply safe working practices in an automotive workplace	
<b>Common - Technical</b>		

Unit code	Unit title	Pre-requisites
AURATA2001	Identify basic automotive faults using troubleshooting processes	
AURATA2002	Read and interpret engineering drawings	
AURATA2003	Produce drawings from design concepts	
AURATA3004	Provide technical guidance	
AURATA3005	Estimate complex jobs	
<b>Bicycle - Sales and Marketing</b>		
AURBCA2001	Work in a retail bicycle environment	
AURBCA2002	Select and adjust bicycle to fit rider	
<b>Bicycle - Health and Safety</b>		
AURBSA3001	Conduct cycling proficiency training	
<b>Bicycle - Technical</b>		
AURBTA1001	Remove and tag bicycle components	
AURBTA1002	Adjust bicycles	
AURBTA2003	Assemble bicycles	
AURBTA2004	Assemble box bicycles for retail sale	
AURBTA3005	Restore bicycles	
AURBTA3006	Identify and select components for custom bicycles	
AURBTA3007	Provide mechanical support to cycling events	
<b>Bicycle - Technical - Brakes</b>		
AURBTB2001	Service and repair bicycle mechanical braking systems	
AURBTB2002	Service bicycle hydraulic braking systems	
AURBTB3003	Repair bicycle hydraulic braking systems	
<b>Bicycle - Technical - Steering and Suspension</b>		

Unit code	Unit title	Pre-requisites
AURBTD2001	Service bicycle steering systems	
AURBTD2002	Service bicycle suspension systems	
AURBTD3003	Repair and overhaul bicycle steering systems	
AURBTD3004	Repair and overhaul bicycle suspension systems	
<b>Bicycle - Technical - Wheels and Tyres</b>		
AURBTJ2001	Remove, repair and fit bicycle tyres	
AURBTJ2002	Service bicycle wheels and hubs	
AURBTJ3003	Design and build bicycle wheels	
AURBTJ3004	Repair and overhaul bicycle wheels and hubs	
<b>Bicycle - Technical - Tools and Equipment</b>		
AURBTK2001	Use and maintain specialised bicycle repair tools	
<b>Bicycle - Technical - Driveline and Final Drives</b>		
AURBTQ2001	Service bicycle drivetrain systems	
AURBTQ3002	Repair bicycle drivetrain systems	
<b>Bicycle - Technical - Electrical and Electronic</b>		
AURBTR3001	Service electric power assist bicycles	
<b>Bicycle - Technical - Accessories</b>		
AURBTV2001	Fit and adjust bicycle accessories	
<b>Bicycle - Technical - Chassis and Frame</b>		
AURBTY3001	Service and repair bicycle frames	
AURBTY4002	Design and build bicycle frames	
AURBTY4003	Assess carbon fibre frames for repair	
<b>Electrical - Technical</b>		
AURETA5001	Analyse and evaluate electrical and electronic faults in	

Unit code	Unit title	Pre-requisites
	electric over-hydraulic systems	
AURETA5002	Analyse and evaluate electrical and electronic faults in safety systems	
AURETA5003	Analyse and evaluate electrical and electronic faults in monitoring and protection systems	
AURETA5004	Analyse and evaluate electrical and electronic faults in convenience and entertainment systems	
AURETA5005	Analyse and evaluate electrical and electronic faults in theft-deterrent systems	
AURETA5006	Analyse and evaluate electrical and electronic faults in climate-control systems	
<b>Electrical - Technical - Brakes</b>		
AURETB3001	Repair electric braking systems	
AURETB5002	Analyse and evaluate electrical and electronic faults in braking systems	
<b>Electrical - Technical - Steering and Suspension</b>		
AURETD3001	Service and repair electronically controlled steering systems	
AURETD5002	Analyse and evaluate electrical and electronic faults in stability, steering and suspension systems	
<b>Electrical - Technical - Engines</b>		
AURETE5001	Analyse and evaluate electrical and electronic faults in engine management systems	
<b>Electrical - Technical - Hybrid Vehicle and Battery Electric Vehicle</b>		
AURETH3001	Depower battery electric vehicles	
AURETH3002	Service and maintain battery electric vehicles	AURETH3001
AURETH4003	Test and repair high voltage battery systems in battery electric vehicles	AURETH3001
AURETH4004	Diagnose and repair traction motor speed control device in battery electric vehicles	AURETH3001

Unit code	Unit title	Pre-requisites
AURETH4005	Diagnose and repair high voltage traction motors in battery electric vehicles	AURETH3001
AURETH4006	Diagnose and repair auxiliary motors and associated components in battery electric vehicles	AURETH3001
AURETH4007	Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles	AURETH3001
AURETH4008	Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles	AURETH3001
AURETH4009	Diagnose and repair DC to DC converters in battery electric vehicles	AURETH3001 AURETR3025
AURETH4010	Test high voltage batteries in hybrid electric vehicles	AURETR3025
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles	
AURETH4012	Service and maintain electrical components in hybrid electric vehicles	AURETH4011
AURETH4014	Diagnose complex faults in battery electric and hybrid electric vehicle systems	
AURETH5013	Analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems	
<b>Electrical - Technical - Tools and Equipment</b>		
AURETK1001	Identify, select and use low voltage electrical test equipment	
AURETK2002	Use and maintain automotive electrical test equipment	
<b>Electrical - Technical - Electrical and Electronic</b>		
AURETR1001	Remove and tag automotive electrical system components	
AURETR1002	Test, service and maintain battery storage systems	
AURETR1003	Apply automotive electrical system fundamentals	
AURETR2005	Install, test and repair electrical security systems and components	
AURETR2006	Carry out soldering of electrical wiring and circuits	

Unit code	Unit title	Pre-requisites
AURETR2007	Demonstrate knowledge of automotive electrical circuits and wiring systems	
AURETR2008	Remove and replace electrical units and assemblies	
AURETR2009	Install, test and repair vehicle lighting and wiring systems	
AURETR2010	Fabricate, test and repair wiring harnesses and looms	
AURETR2011	Install and test basic ancillary electrical components	
AURETR2012	Test and repair basic electrical circuits	
AURETR2013	Inspect and service charging systems	
AURETR2014	Inspect and service starting systems	
AURETR2015	Inspect and service batteries	
AURETR2016	Read and apply vehicle wiring schematics and drawings	
AURETR2035	Demonstrate knowledge of petrol and diesel engine operation	
AURETR2042	Remove, refit and test electrical componentry for operation following body repair activities	
AURETR3017	Overhaul charging system alternators	
AURETR3018	Overhaul starting motors	
AURETR3019	Inspect, service and repair AC electric motor drive systems	
AURETR3020	Repair electronic systems	
AURETR3021	Inspect, service and repair electronic management, monitoring and tracking systems	
AURETR3022	Diagnose and repair vehicle dynamic control systems	
AURETR3023	Diagnose and repair electronic spark ignition engine management systems	
AURETR3024	Diagnose and repair electronic compression ignition engine management systems	
AURETR3025	Test, charge and replace batteries	

Unit code	Unit title	Pre-requisites
AURETR3026	Remove, replace and program electrical and electronic units and assemblies	
AURETR3027	Install ancillary electronic control unit systems and components	
AURETR3028	Diagnose and repair instruments and warning systems	
AURETR3029	Diagnose and repair charging systems	
AURETR3030	Diagnose and repair starting systems	
AURETR3031	Diagnose and repair ignition systems	
AURETR3032	Repair electrical systems	
AURETR3036	Service and repair electronically controlled suspension systems	
AURETR3043	Service and repair electronic body management systems	
AURETR3044	Service and repair electronic drive management systems	
AURETR4004	Diagnose complex electrical and electronic faults in vehicle convenience and entertainment systems	
AURETR4037	Diagnose complex electrical and electronic faults in light vehicle safety systems	
AURETR4038	Diagnose complex faults in motorcycle electrical and electronic systems	
AURETR4039	Diagnose complex electrical and electronic faults in light vehicle theft deterrent systems	
AURETR4040	Diagnose complex electrical and electronic faults in vehicle monitoring and protection systems	
AURETR5033	Develop and apply electronic systems modification	
AURETR5034	Develop and apply electrical systems modification	
<b>Electrical - Technical - Air Conditioning and HVAC</b>		
AURETU2001	Install air conditioning systems	
AURETU2002	Recover vehicle refrigerants	

Unit code	Unit title	Pre-requisites
AURETU2003	Service air conditioning and HVAC systems	
AURETU3004	Diagnose and repair air conditioning and HVAC systems	
AURETU3005	Retrofit and modify air conditioning and HVAC systems	
AURETU4006	Diagnose complex faults in air conditioning and HVAC systems	
AURETU4007	Overhaul air conditioning system components	
<b>Electrical - Technical - Transmission</b>		
AURETX5001	Analyse and evaluate electrical and electronic faults in transmission and driveline systems	
<b>Mechanical - Heavy Vehicle - Technical</b>		
AURHTA1001	Carry out heavy vehicle pre-repair operations	
AURHTA2003	Remove and replace heavy commercial vehicle ancillary components and accessories	
AURHTA3002	Service and repair trailers in excess of 4.5 tonnes	
<b>Mechanical - Heavy Vehicle - Technical - Brakes</b>		
AURHTB3001	Repair air braking systems	
AURHTB3002	Diagnose and repair heavy vehicle hydraulic braking systems	
AURHTB3007	Diagnose and repair heavy vehicle electronic braking systems	
AURHTB4003	Overhaul braking system components (heavy)	
AURHTB4004	Overhaul air braking systems and components	
AURHTB4006	Diagnose complex faults in heavy commercial vehicle braking systems	
AURHTB5005	Analyse and evaluate heavy vehicle braking system faults	
<b>Mechanical - Heavy Vehicle - Technical - Steering and Suspension</b>		
AURHTD2001	Inspect and service heavy commercial vehicle suspension	

Unit code	Unit title	Pre-requisites
	systems	
AURHTD3002	Repair steering systems (heavy vehicle)	
AURHTD3003	Repair suspension systems (heavy vehicle)	
AURHTD3004	Carry out wheel alignment operations (heavy vehicle)	
AURHTD4006	Diagnose complex faults in heavy commercial vehicle steering and suspension systems	
AURHTD5005	Analyse and evaluate heavy vehicle steering and suspension system faults	
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>		
AURHTE2001	Remove and install heavy vehicle engine assemblies	
AURHTE3002	Repair engines and associated engine components (heavy vehicle)	
AURHTE4003	Diagnose complex faults in heavy vehicle diesel engines	
AURHTE5004	Analyse and evaluate heavy vehicle engine and fuel system faults	
<b>Mechanical - Heavy Vehicle - Technical - Fuel Systems</b>		
AURHTF2001	Inspect heavy commercial vehicle fuel systems and components	
<b>Mechanical - Heavy Vehicle - Technical - Wheels and Tyres</b>		
AURHTJ1001	Inspect heavy commercial vehicle wheels and tyres	
AURHTJ2002	Select heavy vehicle tyres and rims for specific applications	
AURHTJ2003	Remove, inspect and refit heavy vehicle wheel assemblies	
AURHTJ2004	Demount, inspect, repair and mount agricultural equipment tyres and tubes	
AURHTJ2006	Remove, inspect, repair and fit tyres and tubes (heavy)	
AURHTJ3005	Identify and apply pneumatic wheeled traction performance enhancement systems (heavy vehicle)	

Unit code	Unit title	Pre-requisites
<b>Mechanical - Heavy Vehicle - Technical - Alternative Fuels</b>		
AURHTL4001	Inspect, repair and diagnose alternative fuel systems for heavy vehicle engines	
<b>Mechanical - Heavy Vehicle - Technical - Driveline and Final Drives</b>		
AURHTQ2001	Inspect heavy commercial vehicle driveline components	
AURHTQ3002	Repair final drive assemblies (heavy vehicle)	
AURHTQ3003	Repair final drive – driveline (heavy vehicle)	
<b>Mechanical - Heavy Vehicle - Technical - Electrical and Electronic</b>		
AURHTR3005	Diagnose and repair heavy trailer electronically controlled roll stability systems	
<b>Mechanical - Heavy Vehicle - Technical - Transmission</b>		
AURHTX3001	Repair transmissions – manual (heavy vehicle)	
AURHTX3002	Inspect, test and replace transmissions - automatic (heavy vehicle)	
AURHTX3003	Repair transmissions - automatic (heavy vehicle)	
AURHTX3004	Diagnose and repair heavy vehicle clutch systems	
AURHTX4006	Diagnose complex faults in heavy commercial vehicle transmission and driveline systems	
AURHTX5005	Analyse and evaluate heavy vehicle transmission system faults	
<b>Mechanical - Heavy Vehicle - Technical - Chassis and Frame</b>		
AURHTY2001	Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes	
AURHTY3002	Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes	
<b>Mechanical - Heavy Vehicle - Technical - Emission and Exhaust</b>		
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems	

Unit code	Unit title	Pre-requisites
<b>Mechanical - Motorcycle - Technical</b>		
AURJTA1001	Perform minor adjustments to motorcycles	
AURJTA1002	Remove and replace motorcycle components and accessories	
AURJTA5003	Analyse and evaluate motorcycle engine and transmission system faults	
<b>Mechanical - Motorcycle - Technical - Brakes</b>		
AURJTB3001	Diagnose and repair motorcycle braking systems	
AURJTB5002	Analyse and evaluate motorcycle braking system faults	
<b>Mechanical - Motorcycle - Technical - Steering and Suspension</b>		
AURJTD2001	Inspect and service motorcycle suspension systems	
AURJTD2002	Inspect and service motorcycle steering systems	
AURJTD3003	Diagnose and repair motorcycle suspension systems	
AURJTD3004	Diagnose and repair motorcycle steering systems	
AURJTD4005	Diagnose complex faults in motorcycle steering and suspension systems	
AURJTD5006	Analyse and evaluate motorcycle steering, suspension and frame system faults	
<b>Mechanical - Motorcycle - Technical - Engines</b>		
AURJTE3001	Diagnose and repair motorcycle engines	
AURJTE4002	Diagnose complex faults in motorcycle engine and transmission systems	
<b>Mechanical - Motorcycle - Technical - Wheels and Tyres</b>		
AURJTJ2001	Remove, inspect and fit motorcycle wheel assemblies	
<b>Mechanical - Motorcycle - Technical - Driveline and Final Drives</b>		
AURJTD2001	Inspect and service motorcycle driveline systems	

Unit code	Unit title	Pre-requisites
AURJTQ3002	Diagnose and repair motorcycle driveline systems	
<b>Mechanical - Motorcycle - Technical - Electrical and Electronic</b>		
AURJTR5001	Analyse and evaluate motorcycle electrical and electronic system faults	
<b>Mechanical - Motorcycle - Technical - Transmission</b>		
AURJTX3001	Diagnose and repair motorcycle clutch systems	
AURJTX3002	Diagnose and repair motorcycle manual transmissions	
AURJTX3003	Diagnose and repair motorcycle automatic transmissions	
<b>Mechanical - Motorcycle - Technical - Chassis and Frame</b>		
AURJTY3001	Repair and align motorcycle frames	
<b>Mechanical - Mobile Plant - Technical</b>		
AURKTA3001	Synchronise plant and equipment	
AURKTA3002	Inspect, service and repair harvesting equipment	
AURKTA3003	Inspect, service and repair crop planting and seeding equipment	
AURKTA3004	Inspect, service and repair spraying and spreading equipment	
AURKTA3005	Inspect, service and repair tracked type drive and support systems	
AURKTA4009	Diagnose complex faults in mobile plant hydraulic systems	
AURKTA5006	Analyse and evaluate tracked mobile plant transmission, steering and braking systems faults	
AURKTA5007	Analyse and evaluate mobile plant hydraulic system faults	
<b>Mechanical - Mobile Plant - Technical - Brakes-</b>		
AURKTB3001	Diagnose and repair mobile plant braking systems	
AURKTB4003	Diagnose complex faults in mobile plant braking systems	

Unit code	Unit title	Pre-requisites
AURKTB5002	Analyse and evaluate wheeled mobile plant braking system faults	
<b>Mechanical - Mobile Plant - Technical - Steering and Suspension</b>		
AURKTD3001	Diagnose and repair mobile plant suspension systems	
AURKTD3002	Diagnose and repair mobile plant steering systems	
AURKTD4005	Diagnose complex faults in mobile plant steering and suspension systems	
AURKTD5003	Analyse and evaluate wheeled mobile plant steering and suspension system faults	
AURKTD5004	Analyse and evaluate tracked mobile plant undercarriage and suspension system faults	
<b>Mechanical - Mobile Plant - Technical - Engines</b>		
AURKTE5001	Analyse and evaluate mobile plant engine and fuel system faults	
<b>Mechanical - Mobile Plant - Technical - Driveline and Drive Trains</b>		
AURKTQ3001	Diagnose and repair mobile plant final drive assemblies	
<b>Mechanical - Mobile Plant - Technical - Electrical and Electronic</b>		
AURKTR3001	Diagnose and repair electric-over-hydraulic control systems	
<b>Mechanical - Mobile Plant - Technical - Transmission</b>		
AURKTX3001	Diagnose and repair powershift transmissions	
AURKTX4003	Diagnose complex faults in mobile plant transmission systems	
AURKTX5002	Analyse and evaluate wheeled mobile plant transmission system faults	
<b>Mechanical - Light Vehicle - Regulatory or Legal - Steering and Suspension</b>		
AURLLD3001	Determine compliance of steering and suspension modifications	
<b>Mechanical - Light Vehicle - Technical</b>		

Unit code	Unit title	Pre-requisites
AURLTA1001	Apply automotive mechanical system fundamentals	
<b>Mechanical - Light Vehicle - Technical - Brakes</b>		
AURLTB3003	Diagnose and repair light vehicle hydraulic braking systems	
AURLTB4001	Overhaul braking system components (light)	
AURLTB4004	Diagnose complex faults in light vehicle braking systems	
AURLTB5002	Analyse and evaluate light vehicle braking system faults	
<b>Mechanical - Light Vehicle - Technical - Steering and Suspension</b>		
AURLTD3001	Select and install performance enhanced suspension system products	
AURLTD3002	Service and rectify faults in lift assisted suspension systems	
AURLTD3003	Reset steering system alignment adjustments to customer specifications	
AURLTD3004	Repair steering systems (light vehicle)	
AURLTD3005	Repair suspension systems (light vehicle)	
AURLTD3006	Carry out wheel alignment operations (light vehicle)	
AURLTD4009	Diagnose complex faults in light vehicle steering and suspension systems	
AURLTD5007	Analyse and evaluate light vehicle steering and suspension system faults	
<b>Mechanical - Light Vehicle - Technical - Engines</b>		
AURLTE2001	Remove and install light vehicle engine assemblies	
AURLTE3002	Repair engines and associated engine components (light vehicle)	
AURLTE4004	Diagnose complex faults in light vehicle petrol engines	
AURLTE4005	Diagnose complex faults in light vehicle diesel engines	
AURLTE5003	Analyse and evaluate light vehicle engine and fuel system faults	

Unit code	Unit title	Pre-requisites
<b>Mechanical - Light Vehicle - Technical - Fuel Systems</b>		
AURLTF3001	Diagnose and repair mechanical fuel injection systems	
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>		
AURLTJ2001	Select tyres and rims for specific applications (light)	
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)	
AURLTJ2003	Remove, inspect and refit light vehicle wheel assemblies	
AURLTJ3004	Provide advice on the effects of wheel and tyre combinations	
<b>Mechanical - Light Vehicle - Technical - Driveline and Final Drives</b>		
AURLTQ3001	Repair final drive assemblies (light vehicle)	
AURLTQ3002	Repair final drive – driveline (light vehicle)	
AURLTQ5003	Analyse and evaluate light vehicle driveline system faults	
<b>Mechanical - Light Vehicle - Technical - Transmission</b>		
AURLTX3001	Repair transmissions - manual (light vehicle)	
AURLTX3002	Repair transmissions - automatic (light vehicle)	
AURLTX3003	Diagnose and repair light vehicle clutch systems	
AURLTX4004	Diagnose complex faults in light vehicle transmission and driveline systems	
<b>Mechanical - Light Vehicle - Technical - Emission and Exhaust</b>		
AURLTZ3001	Diagnose and repair light vehicle emission control systems	
<b>Motorsport - Support and Logistics</b>		
AURMBA2001	Transport a light competition vehicle and support equipment	
AURMBA3002	Load and unload a competition vehicle and support equipment	
<b>Motorsport - Sales and Marketing</b>		

Unit code	Unit title	Pre-requisites
AURMCA5001	Manage motorsport team media liaison	
AURMCA5002	Manage motorsport team promotional partnerships and marketing	
<b>Motorsport - Officiating</b>		
AURMDA2001	Develop and update motorsport industry knowledge	
AURMDA2002	Assist with motorsport officiating duties	
AURMDA3004	Recover a motorsport vehicle	
AURMDA3005	Act as a marshal in a motorsport event	
AURMDA3006	Communicate using flags and signals in a motorsport event	
AURMDA3007	Act as a steward in a motorsport event	
<b>Motorsport</b>		
AURMGA2001	Set up and dismantle temporary work location and equipment	
AURMGA4002	Manage personal presentation and development	
<b>Motorsport - Information Technology</b>		
AURMKA4001	Manage motorsport data	AURETR2012 AURMTA3009 MEM30012A
<b>Motorsport - Regulatory or Legal</b>		
AURMLA2001	Comply with motorsport rules and regulations when officiating	
AURMLA3002	Monitor compliance with motorsport rules and regulations	
AURMLA3003	Inspect motorsport vehicles and equipment for compliance	
<b>Motorsport - Management, Leadership and Supervision</b>		
AURMMA2001	Operate in a motorsport environment	
AURMMA3007	Follow motorsport event and team safety requirements	

Unit code	Unit title	Pre-requisites
AURMMA3008	Coordinate operations of a motorsport team	
AURMMA4002	Manage the preparation of a competition vehicle	
AURMMA5003	Manage motorsport operations	
AURMMA5004	Manage motorsport team development	
AURMMA5005	Manage team pit lane and service area operations	AURMTA3005
AURMMA5006	Prepare and implement race strategies	
<b>Motorsport - Health and Safety</b>		
AURMSA2001	Follow motorsport safety and risk management procedures	
AURMSA3002	Implement and monitor safety and risk management in a motorsport environment	
<b>Motorsport - Technical</b>		
AURMTA2001	Prepare and service a light competition vehicle	
AURMTA3002	Assemble and prepare a competition vehicle	AURMTA3006 AURMTA3007 AURLTD3006
AURMTA3004	Perform competition vehicle preparation procedures at an event	AURMTA3002
AURMTA3005	Perform pit lane and service area operations	
AURMTA3006	Perform torquing and fastening	
AURMTA3007	Conduct non-destructive testing	
AURMTA3009	Collect and log motorsport data	
AURMTA5003	Determine material suitability for competition vehicle components	AURMTA3007 MEM30012A
AURMTA5008	Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles	AURMTD4002 AURMTJ4001 MEM30012A
<b>Motorsport - Technical - Steering and Suspension</b>		

Unit code	Unit title	Pre-requisites
AURMTD4001	Test suspension dampers using a dynamometer	MEM30012A
AURMTD4002	Prepare competition vehicle suspension	AURLTD3005 AURTTD2004
<b>Motorsport - Technical - Engines</b>		
AURMTE4001	Test engines using a dynamometer	
<b>Motorsport - Technical - Fuel Systems</b>		
AURMTF4001	Analyse and repair complex performance carburetted fuel systems	AURTTF2001 AURTTF3006
AURMTF4002	Analyse and repair performance fuel injection systems	AURETR3023 AURTTF2001
<b>Motorsport - Technical - Wheels and Tyres</b>		
AURMTJ4001	Select and prepare tyres and wheels for motorsport applications	
<b>Motorsport - Technical - Driveline and Final Drives</b>		
AURMTQ4001	Analyse and repair complex performance driveline systems	AURLTQ3001 AURLTQ3002 AURLTX3001 AURMTA3007
<b>Motorsport - Technical - Fabrication</b>		
AURMTS3001	Construct hose and pipe assemblies for competition vehicles	
<b>Mechanical - Lifting Equipment - Technical</b>		
AURNTA3001	Inspect, service and repair lift truck mast assemblies	
<b>Outdoor Power Equipment - Technical</b>		
AURPTA1001	Carry out pre-repair operations to outdoor power equipment	
AURPTA1002	Perform minor adjustments to outdoor power equipment	
AURPTA2003	Service and repair rotary cutting systems	
AURPTA2004	Service and repair drum cutting systems	

Unit code	Unit title	Pre-requisites
AURPTA2005	Service and repair chainsaw cutting systems	
AURPTA2006	Service line trimming systems and components	
AURPTA2007	Service and repair post-boring systems	
AURPTA2008	Service and repair post-hole digging systems	
AURPTA2009	Service and repair reciprocating cutting systems	
AURPTA2010	Service pumping systems	
AURPTA3011	Repair pumping systems	
<b>Outdoor Power Equipment - Technical - Engines</b>		
AURPTE2002	Service engines and engine components (outdoor power equipment)	
AURPTE3003	Repair engines and engine components (outdoor power equipment)	
AURPTE4004	Overhaul engines and engine components (outdoor power equipment)	
<b>Outdoor Power Equipment - Technical - Electrical and Electronic</b>		
AURPTR2002	Test and service outdoor electric powered equipment	
AURPTR3001	Test and service 240V portable generators	
<b>Marine - Environment</b>		
AURREA2001	Apply environmental and sustainability best practice in a marine workplace	
AURREA3002	Monitor environmental and sustainability best practice in the marine mechanical industry	
AURREA4004	Manage environmental compliance in a marine workplace	
<b>Marine</b>		
AURRGA3001	Launch and recover a vessel using a trailer	
AURRGA3002	Launch and recover a vessel from crane, gantry and forklift	

Unit code	Unit title	Pre-requisites
AURRGA3003	Moor a motor-driven vessel	
<b>Marine - Technical</b>		
AURRTA2001	Service deck, hull and cabin equipment	
AURRTA3002	Carry out hull repairs	
AURRTA3003	Winterise vessel and engine systems	
AURRTA3004	Recommission vessel systems	
AURRTA3005	Repair deck, hull and cabin equipment	
AURRTA3006	Water test a vessel	
AURRTA5007	Analyse and evaluate light marine hydraulic system faults	
AURRTA5008	Analyse and evaluate light marine hull performance and stability system faults	
<b>Marine - Technical - Steering and Suspension</b>		
AURRTD3001	Diagnose and repair marine steering systems	
<b>Marine - Technical - Engines</b>		
AURRTE1001	Prepare outboard engines for wet-run testing	
AURRTE2002	Service outboard engines and components	
AURRTE2003	Service inboard engines and components	
AURRTE3005	Diagnose and repair marine electrical systems and components	
AURRTE3006	Diagnose and repair outboard engines and components	
AURRTE3007	Diagnose and repair inboard engines and components	
AURRTE3008	Install marine engines, controls and instruments	
AURRTE3009	Recommission marine engine systems	
AURRTE3010	Water test engines in tanks	
AURRTE4011	Overhaul two and four cycle outboard engines	

Unit code	Unit title	Pre-requisites
AURRTE5012	Analyse and evaluate light marine engine and powerhead system faults	
<b>Marine - Technical - Driveline and Final Drives</b>		
AURRTQ2001	Service inboard propeller drive systems	
AURRTQ2002	Service jet drive propulsion systems	
AURRTQ3003	Install inboard propeller drive systems	
AURRTQ3004	Diagnose and repair inboard propeller drive systems	
AURRTQ3005	Install jet drive propulsion systems	
AURRTQ3006	Diagnose and repair jet drive propulsion systems	
<b>Marine - Technical - Electrical and Electronic</b>		
AURRTR1001	Inspect, service and maintain marine battery storage systems	
AURRTR3002	Install marine electronic systems and components	
AURRTR3003	Test, diagnose and repair marine electronic systems and components	
AURRTR3004	Install marine electrical systems and components	
<b>Marine - Technical - Transmission</b>		
AURRTX2001	Service marine outboard and stern drive transmissions	
AURRTX2002	Service marine inboard transmissions	
AURRTX3003	Diagnose and repair marine outboard and stern drive transmissions	
AURRTX3004	Diagnose and repair marine inboard transmissions	
AURRTX5005	Analyse and evaluate light marine transmission system faults	
<b>Sales and Parts, Administration and Management - Administration</b>		
AURSAA2001	Process customer complaints	

Unit code	Unit title	Pre-requisites
AURSAA2002	Maintain customer aftermarket relations	
<b>Sales and Parts, Administration and Management - Support and Logistics</b>		
AURSBA2001	Carry out warehousing procedures	
AURSBA3002	Apply automotive parts interpretation process	
<b>Sales and Parts, Administration and Management - Sales and Marketing</b>		
AURSCA2001	Select automotive parts and products	
AURSCA2002	Present stock and sales area	
AURSCA2003	Apply sales procedures	
AURSCA2004	Carry out cash, credit and funds transfers	
AURSCA2005	Sell products	
AURSCA2006	Promote products and services	
AURSCA3007	Determine used motor vehicle stock requirements	
AURSCA3008	Wholesale used motor vehicle stock	
AURSCA3009	Provide vehicle technology information	
AURSCA3010	Appraise and purchase used motor vehicles to supplement stock for sale	
<b>Sales and Parts, Administration and Management - Sales and Marketing - Paint</b>		
AURSCP2001	Provide information to customers on automotive refinishing products	
<b>Sales and Parts, Administration and Management - Regulatory and Legal</b>		
AURSLA2001	Apply legal requirements relating to product sales	
<b>Mechanical Miscellaneous - Environment</b>		
AURTEA4001	Manage environmental compliance in the mechanical repair industry	
<b>Mechanical Miscellaneous</b>		

Unit code	Unit title	Pre-requisites
AURTGA3001	Drive and manoeuvre trailers	
<b>Mechanical Miscellaneous - Loss Assessment or Repair Quoting</b>		
AURTNA5001	Estimate and calculate costs to repair, maintain or modify a vehicle	
<b>Mechanical Miscellaneous - Technical</b>		
AURTTA1001	Remove and tag steering, suspension and brake system components	
AURTTA1002	Carry out workshop practice activities	
AURTTA1003	Use and maintain basic measuring devices	
AURTTA2004	Carry out servicing operations	
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives	
AURTTA2006	Service hydraulic systems	
AURTTA2007	Inspect, service and repair pneumatic systems	
AURTTA2008	Produce patterns and templates	
AURTTA2009	Carry out pre-repair operations (mechanical)	
AURTTA2010	Service and repair trailers up to 4.5 tonnes	
AURTTA3011	Install hydraulic systems to specified applications	
AURTTA3012	Manufacture and install fluid power hose assemblies	
AURTTA3013	Repair hydraulic systems	
AURTTA3014	Assemble and install pneumatic systems and components	
AURTTA3015	Prepare engineering drawings	
AURTTA3017	Carry out vehicle safety and roadworthy inspections	
AURTTA3018	Carry out diagnostic procedures	
AURTTA3019	Carry out advanced diagnostic procedures	

Unit code	Unit title	Pre-requisites
AURTTA3020	Apply heat-induction processes	
AURTTA4021	Carry out diagnosis of complex system faults	
AURTTA4025	Diagnose complex faults in vehicle integrated stability control systems	
AURTTA4026	Diagnose complex faults in vehicle electric-over-hydraulic systems	
AURTTA5022	Develop and apply mechanical system modifications	
AURTTA5023	Develop and apply hydraulic system modifications	
AURTTA5024	Develop and apply pneumatic system modifications	
<b>Mechanical Miscellaneous - Technical - Brakes</b>		
AURTTB2001	Inspect and service braking systems	
AURTTB2002	Attach friction materials and radius grind	
AURTTB2003	Machine brake drums and brake disc rotors	
AURTTB2004	Inspect and service air braking systems	
AURTTB3005	Assemble and fit braking systems and components	
AURTTB3006	Inspect, service and repair auxiliary braking systems	
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>		
AURTTC2001	Inspect and service cooling systems	
AURTTC2002	Carry out radiator repairs	
AURTTC3003	Diagnose and repair cooling systems	
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>		
AURTTD2001	Inspect steering systems	
AURTTD2002	Inspect and service steering systems	
AURTTD2003	Inspect suspension systems	
AURTTD2004	Inspect and service suspension systems	

Unit code	Unit title	Pre-requisites
AURTTD4005	Overhaul steering system components	
<b>Mechanical Miscellaneous - Technical - Engines</b>		
AURTTE1003	Remove and tag engine system components	
AURTTE2004	Inspect and service engines	
AURTTE3001	Apply knowledge of engine science	
AURTTE4005	Overhaul engines and associated engine components	
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>		
AURTTTF2001	Service petrol fuel systems	
AURTTTF2002	Service diesel fuel injection systems	
AURTTTF3004	Repair diesel fuel injection systems	
AURTTTF3005	Inspect and repair engine forced induction systems	
AURTTTF3006	Diagnose and repair petrol carburettor systems	
AURTTTF4003	Overhaul diesel fuel injection systems	
AURTTTF4007	Overhaul petrol fuel system components	
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>		
AURTTJ2001	Balance wheels and tyres	
AURTTJ2002	Remove and refit wheel hubs and associated brake components	
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>		
AURTTK2001	Use and maintain measuring equipment in an automotive workplace	
AURTTK2002	Use and maintain workplace tools and equipment	
<b>Mechanical Miscellaneous - Technical - Alternative Fuels</b>		
AURTTL3001	Service CNG fuel systems	
AURTTL3002	Diagnose and repair CNG fuel systems	

Unit code	Unit title	Pre-requisites
AURTTL3003	Install CNG fuel systems	
AURTTL3004	Service LNG fuel systems	
AURTTL3005	Diagnose and repair LNG fuel systems	
AURTTL3006	Install LNG fuel systems	
AURTTL3007	Service LPG fuel systems	
AURTTL3008	Diagnose and repair LPG fuel systems	
AURTTL3009	Install LPG fuel systems	
AURTTL3010	Install LPG, CNG and LNG electrical control equipment	
AURTTL4011	Diagnose complex faults in CNG fuel systems	
AURTTL4012	Diagnose complex faults in LNG fuel systems	
AURTTL4013	Diagnose complex faults in LPG fuel systems	
AURTTL5014	Analyse and evaluate gas fuel system faults	
AURTTL5015	Develop and apply gas fuel system modifications	
<b>Mechanical Miscellaneous - Technical - Manufacture</b>		
AURTTM3001	Operate and monitor computer numerical control machines	
AURTTM3002	Repair bearing tunnels and connecting rods in engines	
AURTTM3003	Apply metal to rebuild engine components	
AURTTM3004	Assemble engine blocks and sub-assemblies	
AURTTM3005	Balance rotating and reciprocating engine components	
AURTTM3006	Perform advanced machining and blueprinting of engine components	
AURTTM3007	Carry out grinding operations	
AURTTM3008	Dismantle and evaluate engine blocks and sub-assemblies	
AURTTM3009	Fit sleeves and bore and hone engine cylinders	

Unit code	Unit title	Pre-requisites
AURTTM3010	Heat treat, straighten and reclaim engine components	
AURTTM3011	Recondition engine cylinder heads	
<b>Mechanical Miscellaneous - Technical - Drivelines and Final Drives</b>		
AURTTQ2001	Service final drive assemblies	
AURTTQ2002	Remove and refit driveline components	
AURTTQ2003	Service final drive (driveline)	
AURTTQ4004	Overhaul final drive assemblies	
<b>Mechanical Miscellaneous - Technical - Electrical and Electronic</b>		
AURTTR4001	Diagnose complex faults in engine management systems	
<b>Mechanical Miscellaneous - Technical - Fabrication</b>		
AURTTTS2001	Fabricate exhaust system and components	
<b>Mechanical Miscellaneous - Technical - Welding, Grinding, Machining and Soldering</b>		
AURTTW2001	Carry out soft soldering techniques	
AURTTW3002	Set, operate and monitor specialist machines	
AURTTW3003	Carry out machining operations	
<b>Mechanical Miscellaneous - Technical - Transmission</b>		
AURTTX1001	Remove and tag transmission system components	
AURTTX2002	Inspect and service transmissions (manual)	
AURTTX2003	Inspect and service transmissions (automatic)	
AURTTX2004	Service transmissions (hydrostatic)	
AURTTX2005	Inspect and service clutch systems	
AURTTX3006	Repair transmissions (hydrostatic)	
AURTTX4007	Overhaul clutch assemblies	
AURTTX4008	Overhaul transmissions (manual)	

Unit code	Unit title	Pre-requisites
AURTTX4009	Overhaul transmissions (automatic)	
AURTTX4010	Overhaul transmissions (hydrostatic)	
AURTTX4011	Overhaul torque converters	
<b>Mechanical Miscellaneous - Technical - Chassis and Frame</b>		
AURTTY3001	Repair chassis, frame and associated components	
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>		
AURTTZ2001	Inspect and service emission control systems	
AURTTZ2002	Repair exhaust system components	
<b>Vehicle Body - Environment - Body</b>		
AURVEN2001	Apply environmental regulations and best practice in the body repair industry	
AURVEN3002	Monitor environmental and sustainability best practice in the automotive body repair industry	
AURVEN4003	Plan and manage compliance with environmental regulations in the body repair industry	
<b>Vehicle Body</b>		
AURVGA3001	Determine vehicle rescue method and costs	
AURVGA3002	Recover vehicles	
<b>Vehicle Body - Regulatory or Legal - Body</b>		
AURVLN2001	Apply legal requirements for vehicle dismantlers	
<b>Vehicle Body - Technical</b>		
AURVTA2001	Prepare vehicle, components and equipment for customer use	
AURVTA3002	Remove and replace supplementary restraint systems	
AURVTA3003	Inspect paint, trim and accessories and recommend repair procedures	

Unit code	Unit title	Pre-requisites
AURVTA3004	Inspect vehicle systems and determine preferred repair action	
<b>Vehicle Body - Technical - Glazing</b>		
AURVTG2001	Repair laminated glass	
AURVTG2002	Remove and install rubber glazed windscreens	
AURVTG2003	Remove and install butyl sealed windscreens	
AURVTG2004	Remove and install direct glazed windscreens	
AURVTG2005	Remove and install framed type windscreens	
AURVTG2006	Apply window tinting	
AURVTG2007	Clean glass surfaces	
AURVTG3008	Cut and process flat laminated glass	
AURVTG3009	Remove and install fixed body glass	
AURVTG3010	Remove and install movable body glass	
AURVTG3011	Install side windows	
AURVTG3012	Remove and install heavy vehicle rubber and urethane glazed windscreens	
AURVTG3013	Remove and install large vehicle windscreens	
<b>Vehicle Body - Technical - Tools and Equipment</b>		
AURVTK2001	Use and maintain vehicle body repair hand tools	
<b>Vehicle Body - Technical - Body</b>		
AURVTN1001	Remove and tag vehicle body system components	
AURVTN2002	Carry out panel repairs	
AURVTN2003	Carry out pre-repair vehicle body operations	
AURVTN2004	Remove, replace and realign bolt-on panels, sections and fittings	

Unit code	Unit title	Pre-requisites
AURVTN2005	Remove and fit protector mouldings, transfers and decals	
AURVTN2006	Remove and replace mechanical units and assemblies	
AURVTN2007	Remove salvageable components	
AURVTN2008	Clean vehicle body and door cavities	
AURVTN2009	Clean vehicle engine and engine compartment	
AURVTN2010	Clean vehicle underbody	
AURVTN2011	Remove and install rear vision mirrors	
AURVTN2030	Service air compressors and air lines	
AURVTN2033	Service, repair and replace air compressors and components	
AURVTN2037	Disassemble and test vehicle units and components	
AURVTN3012	Install vehicle sunroofs	
AURVTN3013	Carry out paint-less dent repairs	
AURVTN3014	Repair body panels by beating and split repair	
AURVTN3015	Repair body panels using metal finishing techniques	
AURVTN3016	Repair body panels incorporating filler	
AURVTN3017	Repair body panels and thermoplastic components	
AURVTN3018	Repair and replace structural damage by welding	
AURVTN3019	Repair and replace structural damage by riveting	
AURVTN3020	Replace major welded panels	
AURVTN3021	Repair body components using lead wiping	
AURVTN3022	Repair vehicle body misalignment	
AURVTN3023	Remove and replace adhesive bonded panels and structures	
AURVTN3024	Install vehicle body component seals	
AURVTN3025	Repair corroded panels and components	

Unit code	Unit title	Pre-requisites
AURVTN3026	Repair aluminium body panels (finishing)	
AURVTN3027	Repair aluminium body panels (filling)	
AURVTN3028	Identify and repair high strength steel components	
AURVTN3029	Set up and operate universal measuring systems	
AURVTN3031	Conduct major sectional repairs	
AURVTN3035	Apply original equipment manufacturer repair procedures	
AURVTN4032	Determine vehicle damage and recommended repair procedures	
AURVTN5034	Evaluate and select bodywork materials, equipment and processes	
<b>Vehicle Body - Technical - Paint</b>		
AURVTP2001	Apply paint removal methods	
AURVTP2002	Carry out masking procedures	
AURVTP2003	Prepare spray painting materials and equipment	
AURVTP2004	Apply fundamental colour matching techniques	
AURVTP2005	Apply rust prevention and sound deadening materials	
AURVTP2006	Prepare vehicle components for paint repairs	
AURVTP2007	Apply paint touch-up techniques	
AURVTP2008	Clean and polish vehicle exterior paint	
AURVTP2009	Apply vehicle body film wrapping	
AURVTP2026	Carry out basic airbrush application techniques	
AURVTP2027	Carry out custom graphics design and layout techniques	
AURVTP3010	Prepare spray booths and paint drying equipment	
AURVTP3011	Apply solid acrylic enamel refinishing materials using two component systems	

Unit code	Unit title	Pre-requisites
AURVTP3012	Apply air dry and polyurethane enamel refinishing materials	
AURVTP3013	Prepare substrate for refinishing	
AURVTP3014	Apply multi-layer and clear over-base colour matching techniques	
AURVTP3015	Apply solid colour matching techniques	
AURVTP3016	Carry out paint rectification and touch-up work for solids using two component systems	
AURVTP3017	Carry out paint rectification and touch-up work for clear over base using two component systems	
AURVTP3018	Carry out paint rectification for multi-layer and pearl using two component systems	
AURVTP3019	Prepare and paint plastic components	
AURVTP3020	Carry out denibbing, buffing and polishing	
AURVTP3021	Restore vehicle exterior paint	
AURVTP3022	Carry out custom painting techniques	
AURVTP3023	Mix and apply clear over-base refinishing materials in two-component system	
AURVTP3024	Mix and apply clear over-base multi-layer pearl refinishing materials	
AURVTP3025	Mix and apply water-based refinishing materials	
<b>Vehicle Body - Technical - Fabrication</b>		
AURVTS2006	Carry out fabrication of components	
AURVTS3001	Carry out wood working operations for fabrication	
AURVTS3002	Repair plugs, moulds, frames and flooring using wood materials	
AURVTS3003	Fabricate composite material components	
AURVTS3004	Repair fibreglass and composite material components	

Unit code	Unit title	Pre-requisites
AURVTS3005	Fabricate vehicle body panels and components	
<b>Vehicle Body - Technical - Trimming and Upholstery</b>		
AURVTT2001	Carry out sewing repairs and alterations	
AURVTT2002	Carry out trim repairs and alterations	
AURVTT2003	Remove and replace vehicle interior trim components	
AURVTT2004	Trim vehicle components	
AURVTT2005	Select and apply trim and fabric materials	
AURVTT2006	Select and apply trim and fabric adhesives	
AURVTT2007	Clean and finish plastic trim and fittings	
AURVTT2008	Clean and finish vehicle interior trim and seats	
AURVTT2009	Remove and replace seats and internal fittings	
AURVTT3010	Remove and replace vehicle head lining	
AURVTT3011	Repair seat frames	
AURVTT3012	Carry out sewing operations	
AURVTT3013	Fabricate loose and fitted covers	
AURVTT3014	Fabricate marine covers	
AURVTT3015	Fabricate canvas products	
AURVTT3016	Fabricate frame structures	
AURVTT3017	Fabricate and install floor coverings	
AURVTT3018	Fabricate and install soft top hoods	
AURVTT3019	Fabricate and install canopies and curtains	
AURVTT3020	Select and use leather in trimming	
AURVTT3021	Select and use adhesives	
<b>Vehicle Body - Technical - Accessories</b>		

Unit code	Unit title	Pre-requisites
AURVTW2001	Remove, replace, fit and test components and accessories	
<b>Vehicle Body - Technical - Welding,Grinding, Machining and Soldering</b>		
AURVTW2001	Carry out manual metal arc welding procedures	
AURVTW2002	Carry out brazing procedures	
AURVTW2003	Carry out gas metal arc welding procedures	
AURVTW2004	Carry out gas tungsten arc welding procedures	
AURVTW2005	Carry out spot welding procedures	
AURVTW2007	Conduct oxy-acetylene, thermal heating and cutting	
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures	
AURVTW3006	Carry out thermoplastic welding procedures	

### Imported Units of Competency in the Automotive Industry Retail, Service and Repair Training Package

Unit Code	Unit Title	Prerequisites
<b>AUM Automotive Manufacturing Training Package</b>		
AUMABA002	Operate load shifting equipment	
AUMAMM001	Influence and lead work groups in an auto manufacturing workplace	
AUMGTG001	Install fixed and moveable glass components	
AUMGTS004	Fabricate parts for sub-assemblies	
AUMGTY002	Install components	
<b>AUR Automotive Retail, Service and Repair Training Package</b>		
AURFA009	Carry out research into the automotive industry	
AURETK003	Operate electrical test equipment	
AURETR046	Remove and refit vehicle batteries	

Unit Code	Unit Title	Prerequisites
AURETR047	Recharge vehicle batteries	
AURETR048	Construct and test basic electronic circuits	
AURKKJ001	Manage use of tyre management software	
AURKTJ001	Remove, inspect and fit earthmoving and off-the-road tyres	
AURKTJ002	Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies	
AURKTJ003	Perform minor repairs to earthmoving and off-the-road tyres	
AURKTJ004	Conduct non-destructive testing of wheel and rim assemblies	
AURKTJ005	Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications	
AURKTJ006	Use earthmoving and off-the-road tyre handlers	
AURTTA027	Carry out basic vehicle servicing operations	
AURTTB007	Remove and replace brake assemblies	
AURTTC004	Remove and replace radiators	
AURTTD006	Remove and replace vehicle front suspension springs	
AURTTD007	Remove and replace steering assemblies	
AURTTE006	Remove and replace conventional engine assemblies	
AURTTE007	Dismantle and assemble single cylinder four-stroke petrol engines	
AURTTE008	Dismantle and assemble multi-cylinder four-stroke petrol engines	
AURTTE009	Remove and replace engine cylinder heads	
AURTTJ003	Remove and replace wheel and tyre assemblies	
AURTTX012	Dismantle and assemble conventional manual transmissions	

Unit Code	Unit Title	Prerequisites
AURTTX013	Remove and replace clutch assemblies	
AURVNA003	Review vehicle repair quotations	
AURVNA005	Inspect quality of vehicle repair work	
AURVNA007	Apply automotive mechanical and electrical knowledge to vehicle loss assessments	
AURVNA008	Apply automotive body and paint knowledge to vehicle loss assessments	
AURVNN001	Evaluate vehicle bodywork for damage and identify repair requirements	
AURVNP001	Evaluate vehicle paintwork for damage and identify refinish requirements	
AURVTA005	Clean vehicles	
AURVTP029	Prepare surface and prime repaired body panels	
AURVTW010	Set up and use welding equipment	
<b>BSB07 Business Services Training Package</b>		
BSBCUS301B	Deliver and monitor a service to customers	
BSBCUS501C	Manage quality customer service	
BSBFIA301A	Maintain financial records	
BSBFIA303A	Process accounts payable and receivable	
BSBFIA401A	Prepare financial reports	
BSBFIM501A	Manage budgets and financial plans	
BSBFLM312C	Contribute to team effectiveness	
BSBFRA403B	Manage relationship with franchisor	
BSBWHS501A	Ensure a safe workplace	
BSBHRM505B	Manage remuneration and employee benefits	
BSBINM202A	Handle mail	

Unit Code	Unit Title	Prerequisites
BSBINN301A	Promote innovation in a team environment	
BSBINN502A	Build and sustain an innovative work environment	
BSBITS401B	Maintain business technology	
BSBITU305A	Conduct online transactions	
BSBLED401A	Develop teams and individuals	
BSBMGT502B	Manage people performance	
BSBMGT515A	Manage operational plan	
BSBMKG523A	Design and develop an integrated marketing communication plan	
BSBWHS501A	Ensure a safe workplace	
BSBPRO401A	Develop product knowledge	
BSBPUR402B	Negotiate contracts	
BSBREL402A	Build client relationships and business networks	
BSBRES401A	Analyse and present research information	
BSBRKG304B	Maintain business records	
BSBSLS402A	Identify sales prospects	
BSBSLS403A	Present a sales solution	
BSBSLS404A	Secure prospect commitment	
BSBSLS405A	Support post sale activities	
BSBSMB406A	Manage small business finance	
BSBSMB407A	Manage a small team	
BSBWHS301A	Maintain workplace safety	
BSBWHS401A	Implement and monitor WHS policies, procedures and programs to meet legislative requirements	
BSBWOR202A	Organise and complete daily work activities	

Unit Code	Unit Title	Prerequisites
BSBWOR204A	Use business technology	
BSBWOR301B	Organise personal work priorities and development	
BSBWOR401A	Establish effective workplace relationships	
BSBWOR404B	Develop work priorities	
BSBWOR501B	Manage personal work priorities and professional development	
BSBWOR502B	Ensure team effectiveness	
<b>FNS10 Financial Services Training Package</b>		
FNSASIC302C	Develop, present and negotiate client solutions	
<b>ICA11 Information and Communications Technology Training Package</b>		
ICAWEB201A	Use social media tools for collaboration and engagement	
<b>MEM05 Metal and Engineering Training Package</b>		
MEM05004C	Perform routine oxy acetylene welding	
MEM05006C	Perform brazing and or silver soldering	
MEM05007C	Perform manual heating and thermal cutting	
MEM07005C	Perform general machining	
MEM09002B	Interpret technical drawing	
MEM12023A	Perform engineering measurements	
MEM18001C	Use hand tools	
MEM18002B	Use power tools/hand held operations	
MEM18028B	Maintain engine lubrication systems	
MEM24001B	Perform basic penetrant testing	
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	
<b>MSF Furnishing Training Package</b>		

Unit Code	Unit Title	Prerequisites
MSFGG2005	Apply basic glass handling	
MSFGG3001	Store and handle glass	
MSFUP3001	Apply traditional foundations to upholstered furniture	
<b>MSA07 Manufacturing Training Package</b>		
MSAENV272B	Participate in environmentally sustainable work practices	
MSAENV472B	Implement and monitor environmentally sustainable work practices	
MSAENV672B	Develop workplace policy and procedures for environmental sustainability	
<b>MSS11 Sustainability Training Package</b>		
MSS403030A	Improve cost factors in work practices	
<b>PSP12 Public Sector Training Package</b>		
PSPTRAN501A	Provide specialist vehicle technical advice	
<b>RII09 Resources and Infrastructure Industry Training Package</b>		
RIICOM201D	Communicate in the workplace	
RIIHAN301D	Operate elevating work platform	
RIIQUA201D	Maintain and monitor site quality standards	
RIIRIS201D	Conduct local risk control	
RIIWHS201D	Work safely and follow WHS policies and procedures	
RIIWHS204D	Work safely at heights	
<b>SIR07 Retail Services Training Package</b>		
SIRXCCS201	Apply point-of-sale handling procedures	
SIRXCCS202	Interact with customers	
SIRXFIN201	Balance and secure point-of-sale terminal	
SIRXICT001A	Operate retail technology	

Unit Code	Unit Title	Prerequisites
SIRXINV001A	Perform stock control procedures	
SIRXINV002A	Maintain and order stock	
SIRXMER201	Merchandise products	
SIRXMER303	Coordinate merchandise presentation	
SIRXRSK001A	Minimise theft	
SIRXWHS302	Maintain store safety	
SITXADM004A	Plan and manage meetings	
<b>TAE10 Training and Education</b>		
TAEDEL301A	Provide work skill instruction	
TAEDEL404A	Mentor in the workplace	
<b>TLI10 Transport and Logistics Training Package</b>		
TLIA2012A	Pick and process orders	
TLIA2013A	Receive goods	
TLIA2020A	Replenish stock	
TLIA3039A	Receive and store stock	

## Mapping of qualifications

### Summary Mapping of AUR12 Release 2 Automotive Industry Retail, Service and Repair Training Package to AUR12 Release 2.1 Automotive Industry Retail, Service and Repair Training Package Qualifications

Key: E = equivalent, N = not equivalent

Code	Qualification Title	Relationship	E/N	Comment
AUR20712	Certificate II in Automotive Vocational Preparation Release 3	AUR20712 Certificate II in Automotive Vocational Preparation Release 2	E	Twenty new imported units added to the elective bank These imported units are from AUR Release2: <ul style="list-style-type: none"> <li>AURAF009</li> </ul>

Code	Qualification Title	Relationship	E/N	Comment
				<ul style="list-style-type: none"> <li>• AURETK003</li> <li>• AURETR046</li> <li>• AURETR047</li> <li>• AURETR048</li> <li>• AURTTA027</li> <li>• AURTTB007</li> <li>• AURTTTC004</li> <li>• AURTTD006</li> <li>• AURTTD007</li> <li>• AURTTE006</li> <li>• AURTTE007</li> <li>• AURTTE008</li> <li>• AURTTE009</li> <li>• AURTTJ003</li> <li>• AURTTX012</li> <li>• AURTTX013</li> <li>• AURVTA005</li> <li>• AURVTP029</li> <li>• AURVTW010</li> </ul>
AUR21812	Certificate II in Automotive Steering and Suspension System Technology Release 2	AUR21812 Certificate II in Automotive Steering and Suspension System Technology Release 1	E	<p>Four elective units added to the elective unit pool:</p> <ul style="list-style-type: none"> <li>• AURHTD3004</li> <li>• AURLTD3006</li> <li>• AURTTD2001</li> <li>• AURTTD2003</li> </ul>
AUR21913	Certificate II in Automotive Tyre Servicing Technology Release 2	AUR21913 Certificate II in Automotive Tyre Servicing Technology Release 1	E	<p>Updated imported elective units:</p> <p>RIICOM201D replaces RIICOM201A</p> <p>RIIWHS201D replaces RIIOHS201A</p> <p>RIIWHS204D replaces RIIOHS204A</p> <p>RIIQUA201D replaces RIIQUA201A</p> <p>RIIRIS201D replaces RIIRIS201B</p>

Code	Qualification Title	Relationship	E/N	Comment
		AUR30512 Certificate III in Marine Mechanical Technology Release 1	N/A	Qualification removed from AUR12 Release 2.0. New qualification written to new standards for training packages, extensively modified and placed in the AUR Training package.
		AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology Release 1	N/A	Qualification removed from AUR12 Release 2.0. New qualification written to new standards for training packages, structure modified. Qualification placed in AUR Training Package.
AUR31912	Certificate III in Elevating Work Platform Technology Release 2	AUR31912 Certificate III in Elevating Work Platform Technology Release 1	E	Updated imported elective units: RIIHAN301D replaces RIIHAN301B
AUR32112	Certificate III in Automotive Body Repair Technology Release 3	AUR32112 Certificate III in Automotive Body Repair Technology Release 2	E	Updated imported elective units: RIIWH3204D replaces RIIOHS204A
AUR32212	Certificate III in Automotive Glazing Technology Release 4	AUR32212 Certificate III in Automotive Glazing Technology Release 3	E	Updated imported units: MSFGG2005 replaces LMFGG2005C MSFGG3001 replaces LMFGG3001C
AUR32312	Certificate III in Automotive and Marine Trimming Technology Release 3	AUR32312 Certificate III in Automotive and Marine Trimming Technology Release 2	E	Updated imported elective units: MSFUP3001 replaces LMFUP3001B
		AUR40512 Certificate IV in Vehicle Loss Assessing Release 1	N/A	Qualification removed from AUR12 Release 2.0. Written to new standards for training

Code	Qualification Title	Relationship	E/N	Comment
				packages, extensively modified and placed in AUR Release 2.0
AUR40712	AUR40712 Certificate IV in Automotive Body Repair Technology Release 3	AUR40712 Certificate IV in Automotive Body Repair Technology Release 2	E	Updated imported units: AURVNN001 replaces AURANN4001 AURNVA005 replaces AURNVA4005 AURVNA003 replaces AURVNA4003 AURVNA007 replaces AURVNA4007 AURVNA008 replaces AURVNA4008 AURVNN001 replaces AURVNN4001 AURVNP001 replaces AURVNP4001
AUR50112	Diploma of Automotive Management Release 4	AUR50112 Diploma of Automotive Management Release 3	E	Updated imported units: BSBHRM505B replaces BSBHRM505A

**Summary Mapping of AUR12 Release 1.1 Automotive Industry Retail, Service and Repair Training Package to AUR12 Release 2 Automotive Industry Retail, Service and Repair Training Package Qualifications**

Key: E = equivalent, N = not equivalent

Code	Qualification Title	Relationship	E/N	Comment
AUR21913	Certificate II in Automotive Tyre Servicing Technology	AUR21912 Certificate II in Automotive Tyre Servicing Technology	E	New earthmoving and off-the-road tyre specialist group added to specialist elective groups. This new specialist group includes four imported units from AUR Release1.

Code	Qualification Title	Relationship	E/N	Comment
AUR30713	Certificate III in Outdoor Power Equipment Technology	AUR30712 Certificate III in Outdoor Power Equipment Technology	N	Core unit requirement reduced from 18 to 15 units with the relocation of three core units to elective unit pool: <ul style="list-style-type: none"> <li>• AURPTA2004</li> <li>• AURPTR2002</li> <li>• AURPTR3001</li> </ul> One elective unit removed: <ul style="list-style-type: none"> <li>• AURTTB3006.</li> </ul>
AUR32112	Certificate III in Automotive Body Repair Technology Release 2	AUR32112 Certificate III in Automotive Body Repair Technology Release 1	E	AUMABA3002 superseded by AUMABA002 AUMGTY3002 superseded by AUMGTY002
AUR32212	Certificate III in Automotive Glazing Technology Release 3	AUR32212 Certificate III in Automotive Glazing Technology Release 2	E	AUMGTG3001 superseded by AUMGTG001
AUR32312	Certificate III in Automotive And Marine Trimming Technology Release 2	AUR32312 Certificate III in Automotive And Marine Trimming Technology Release 1	E	AUMGTS3004 superseded by AUMGTS004
AUR40712	Certificate IV in Automotive Body Repair Technology Release 2	AUR40712 Certificate IV in Automotive Body Repair Technology Release 1	E	AUMAMM3001 superseded by AUMAMM001
AUR50112	Diploma of Automotive Management Release 3	Diploma of Automotive Management Release2	E	BSBCUS501A superseded by BSBCUS501C

# Summary Mapping of AUR12 Release 1 Automotive Industry Retail, Service and Repair Training Package to AUR12 Release 1.1 Automotive Industry Retail, Service and Repair Training Package Qualifications

E= equivalent N= not equivalent

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR12 v1
AUR20712	Certificate II in Automotive Vocational Preparation Release 2	AUR20712 Certificate II in Automotive Vocational Preparation Release 1	E	Unit titles changed to reflect intent of unit: AURJTJ2001 AURLTJ2003
AUR30912	Certificate III in Motorsport Technology Release 2	AUR30912 Certificate III in Motorsport Technology Release 1	E	AURMKA4001 Pre requisites amended to: AURETR2012, AURMTA3009, MEM30012A  Added 2 Elective Units: AURLTX3003 AURTTF3005
AUR31012	Certificate III in Automotive Sales Release 2	AUR31012 Certificate III in Automotive Sales Release 1	E	BSBSLS402A superseded by BSBSLS407A  BSBSLS403A superseded by BSBSLS408A  units removed from Specialist Elective Units: BSBSLS404A BSBSLS405A
AUR32212	Certificate III in Automotive Glazing Technology Release 2	AUR32212 Certificate III in Automotive Glazing Technology Release 1	E	Unit titles corrected: AURAEA2002 AUMGTG3001
AUR40312	Certificate IV in Motorsport Technology Release 2	AUR40312 Certificate IV in Motorsport Technology Release 1	E	AURMKA4001 Pre requisites amended to:  AURETR2012, AURMTA3009,

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR12 v1
				MEM30012A
AUR50112	Diploma of Automotive Management Release 2	AUR50112 Diploma of Automotive Management Release 1	E	BSBHRM402A superseded by BSBHRM405A
AUR50312	Diploma in Motorsport Technology Release 2	AUR50312 Diploma in Motorsport Technology Release 1	E	Added Pre Requisites for: AURMMA5005 AURMTA5003 AURMTA5008

**Summary Mapping of AUR05 v4 Automotive Industry Retail, Service and Repair Training Package to AUR12 v1 Automotive Industry Retail, Service and Repair Training Package Qualifications**

**E= equivalent      N= not equivalent**

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR05v4
		AUR20205 - Certificate II in Automotive Aftermarket Manufacturing	N/A	Qualification removed due to lack of clear vocational outcome
		AUR21205 - Certificate II in Automotive Warehousing/Distribution Operations	N/A	This qualification has been removed at the request of industry
		AUR31105 - Certificate III in Automotive Warehousing/Distribution Operations	N/A	This qualification has been removed at the request of industry
		AUR31205 Certificate III in Automotive Retail,	N/A	Qualification removed due to lack of clear vocational

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR05v4
		Service and Repair		outcome
AUR10112	Certificate I in Automotive Vocational Preparation	AUR10105 - Certificate I in Automotive	N	Major changes to structure and focus of qualification. Core units changed from 2 to 5 units Total units changed from 7 to 8 units
AUR20112	Certificate II in Automotive Administration	AUR20105 - Certificate II in Automotive Administration	E	Minor changes to structure and focus of qualification. Core units changed from 7 to 6 units Total units changed from 13 to 10 units
AUR20212	Certificate II in Automotive Air Conditioning Technology	AUR20705 - Certificate II in Automotive Mechanical	N	Major changes to structure and focus of qualification. Core units changed from 1 to 7 units
AUR20312	Certificate II in Bicycle Mechanical Technology	AUR20311 - Certificate II in Bicycles	N	Minor changes to structure and focus of qualification. Core units changed from 5 to 8 units
AUR20412	Certificate II in Automotive Electrical Technology	AUR20408 - Certificate II in Automotive Electrical Technology	N	Major changes to structure and focus of qualification. Core units changed from 3 to 10 units Total units changed from 13 to 16 units
AUR20512	Certificate II in Automotive Servicing Technology	AUR20505 - Certificate II in Automotive Vehicle Servicing	N	Major changes to structure and focus of qualification. Core units changed from 2 to 3 units
AUR20612	Certificate II in Marine Mechanical Technology	AUR20611 - Certificate II in Marine	N	Major changes to structure and focus of qualification. Core units changed from 4

<b>Code</b>	<b>Qualification Title</b>	<b>Relationship</b>	<b>E/N</b>	<b>Comment in relationship to Training Package AUR05v4</b>
				to 12 units
AUR20712	Certificate II in Automotive Vocational Preparation		N/A	New qualification
AUR20812	Certificate II in Outdoor Power Equipment Technology	AUR20811 - Certificate II in Outdoor Power Equipment	N	Major changes to structure and focus of qualification. Core units changed from 3 to 8 units
AUR20912	Certificate II in Automotive Body Repair Technology	AUR20905 - Certificate II in Automotive Vehicle Body	N	Major changes to structure and focus of qualification. Core units changed from 1 to 6 units
AUR21012	Certificate II in Motorsport Technology	AUR21011 - Certificate II in Motorsport	N	Major changes to structure and focus of qualification. Core units changed from 5 to 8 units Total units changed from 15 to 16 units
AUR21112	Certificate II in Automotive Sales	AUR21105 - Certificate II in Automotive Sales	E	Minor changes to structure and focus of qualification. Core units changed from 7 to 6 units Total units changed from 12 to 18 units
AUR21212	Certificate II in Automotive Underbody Technology	AUR20705 - Certificate II in Automotive Mechanical	N	Major changes to structure and focus of qualification. Core units changed from 1 to 8 units Total units changed from 13 to 14 units
AUR21312	Certificate II in Automotive Braking System Technology	AUR20705 - Certificate II in Automotive	N	Major changes to structure and focus of qualification. Core units changed from 1

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR05v4
		Mechanical		to 7 units Total units changed from 13 to 12 units
AUR21412	Certificate II in Automotive Cooling System Technology	AUR20705 - Certificate II in Automotive Mechanical	N	Major changes to structure and focus of qualification. Core units changed from 1 to 8 units Total units changed from 13 to 14 units
AUR21512	Certificate II in Automotive Cylinder Head Reconditioning	AUR20705 - Certificate II in Automotive Mechanical	N	Major changes to structure and focus of qualification. Core units changed from 1 to 7 units Total units changed from 13 to 14 units
AUR21612	Certificate II in Automotive Driveline System Technology	AUR20705 - Certificate II in Automotive Mechanical	N	Major changes to structure and focus of qualification. Core units changed from 1 to 8 units Total units changed from 13 to 14 units
AUR21712	Certificate II in Automotive Exhaust System Technology	AUR20705 - Certificate II in Automotive Mechanical	N	Major changes to structure and focus of qualification. Core units changed from 1 to 8 units Total units changed from 13 to 14 units
AUR21812	Certificate II in Automotive Steering and Suspension System Technology	AUR20705 - Certificate II in Automotive Mechanical	N	Major changes to structure and focus of qualification. Core units changed from 1 to 8 units Total units changed from 13 to 12 units
AUR21912	Certificate II in	AUR20705 -	N	Major changes to structure

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR05v4
	Automotive Tyre Servicing Technology	Certificate II in Automotive Mechanical		and focus of qualification. Core units changed from 1 to 4 units Total units changed from 13 to 14 units
AUR30112	Certificate III in Automotive Administration	AUR30105 - Certificate III in Automotive Administration	E	Minor changes to structure and focus of qualification. Core units changed from 11 to 10 units Total units changed from 23 to 18 units
AUR30212	Certificate III in Bicycle Workshop Operations	AUR30211 - Certificate III in Bicycles	N	Major changes to structure and focus of qualification. Core units changed from 6 to 16 units
AUR30312	Certificate III in Automotive Electrical Technology	AUR30308 - Certificate III in Automotive Electrical Technology	N	Major changes to structure and focus of qualification. Core units changed from 5 to 21 units Total units changed from 28 to 32 units
AUR30412	Certificate III in Agricultural Mechanical Technology	AUR30405 - Certificate III in Automotive Mechanical Technology	N	Major changes to structure and focus of qualification. Core units changed from 3 to 24 units
AUR30512	Certificate III in Marine Mechanical Technology	AUR30511 - Certificate III in Marine	N	Major changes to structure and focus of qualification. Core units changed from 5 to 15 units
AUR30612	Certificate III in Light Vehicle Mechanical Technology	AUR30405 - Certificate III in Automotive Mechanical Technology	N	Major changes to structure and focus of qualification. Core units changed from 3 to 20 units

<b>Code</b>	<b>Qualification Title</b>	<b>Relationship</b>	<b>E/N</b>	<b>Comment in relationship to Training Package AUR05v4</b>
AUR30712	Certificate III in Outdoor Power Equipment Technology	AUR30711 - Certificate III in Outdoor Power Equipment	N	Major changes to structure and focus of qualification. Core units changed from 4 to 18 units
AUR30812	Certificate III in Motorcycle Mechanical Technology	AUR30405 - Certificate III in Automotive Mechanical Technology	N	Major changes to structure and focus of qualification. Core units changed from 3 to 24 units
AUR30912	Certificate III in Motorsport Technology	AUR30911 - Certificate III in Motorsport	N	Major changes to structure and focus of qualification. Core units changed from 9 to 21 units
AUR31012	Certificate III in Automotive Sales	AUR31005 - Certificate III in Automotive Sales	N	Major changes to structure and focus of qualification. Core units changed from 7 to 10 units Total units changed from 28 to 20 units
AUR31112	Certificate III in Heavy Commercial Vehicle Mechanical Technology	AUR30405 - Certificate III in Automotive Mechanical Technology	N	Major changes to structure and focus of qualification. Core units changed from 3 to 23 units
AUR31212	Certificate III in Mobile Plant Technology	AUR30405 - Certificate III in Automotive Mechanical Technology	N	Major changes to structure and focus of qualification. Core units changed from 3 to 22 units
AUR31312	Certificate III in Automotive Engine Reconditioning	AUR31311 - Certificate III in Automotive Engine Reconditioning	E	ISC update equivalent Revised qualification Qualification and unit codes recoded to meet policy requirements

<b>Code</b>	<b>Qualification Title</b>	<b>Relationship</b>	<b>E/N</b>	<b>Comment in relationship to Training Package AUR05v4</b>
AUR31412	Certificate III in Automotive Diesel Fuel Technology	AUR30611 - Certificate III in Automotive Specialist	N	Major changes to structure and focus of qualification. Core units changed from 3 to 13 units Total units changed from 28 to 21 units
AUR31512	Certificate III in Automotive Diesel Engine Technology	AUR30611 - Certificate III in Automotive Specialist	N	Major changes to structure and focus of qualification. Core units changed from 3 to 14 units
AUR31612	Certificate III in Automotive Drivetrain Technology	AUR30611 - Certificate III in Automotive Specialist	N	Major changes to structure and focus of qualification. Core units changed from 3 to 11 units Total units changed from 28 to 25 units
AUR31712	Certificate III in Forklift Technology	AUR30611 - Certificate III in Automotive Specialist	N	Major changes to structure and focus of qualification. Core units changed from 3 to 18 units
AUR31812	Certificate III in Heavy Commercial Trailer Technology	AUR30611 - Certificate III in Automotive Specialist	N	Major changes to structure and focus of qualification. Core units changed from 3 to 12 units
AUR31912	Certificate III in Elevating Work Platform Technology	AUR30611 - Certificate III in Automotive Specialist	N	Major changes to structure and focus of qualification. Core units changed from 3 to 20 units Total units changed from 28 to 32 units
AUR32012	Certificate III in Automotive Alternative Fuel Technology	AUR30611 - Certificate III in Automotive Specialist	N	Major changes to structure and focus of qualification. Core units changed from 3 to 11 units

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR05v4
				Total units changed from 28 to 32 units
AUR32112	Certificate III in Automotive Body Repair Technology	AUR30805 - Certificate III in Automotive Vehicle Body	N	Major changes to structure and focus of qualification. Core units changed from 2 to 16 units Total units changed from 28 to 30 units
AUR32212	Certificate III in Automotive Glazing Technology	AUR30805 - Certificate III in Automotive Vehicle Body	N	Major changes to structure and focus of qualification. Core units changed from 2 to 18 units Total units changed from 28 to 30 units
AUR32312	Certificate III in Automotive and Marine Trimming Technology	AUR30805 - Certificate III in Automotive Vehicle Body	N	Major changes to structure and focus of qualification. Core units changed from 2 to 11 units Total units changed from 28 to 30 units
AUR32412	Certificate III in Automotive Refinishing Technology	AUR30805 - Certificate III in Automotive Vehicle Body	N	Major changes to structure and focus of qualification. Core units changed from 2 to 51 units Total units changed from 28 to 30 units
AUR32512	Certificate III in Automotive Underbody Technology	AUR30611 - Certificate III in Automotive Specialist	N	Major changes to structure and focus of qualification. Core units changed from 3 to 13 units
AUR40112	Certificate IV in Automotive Management	AUR40105 - Certificate IV in Automotive Management	N	Major changes to structure and focus of qualification. Core units changed from 2 to 6 units

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR05v4
				Total units changed from 20 to 10 units
AUR40212	Certificate IV in Automotive Mechanical Diagnosis	AUR40208 - Certificate IV in Automotive Technology	N	Significant change to focus of qualification and elective list
AUR40312	Certificate IV in Motorsport Technology	AUR40305 - Certificate IV in Motorsport	N	Significant change to focus of qualification and elective list Core units changed from 0 to 1 units
AUR40412	Certificate IV in Automotive Performance Enhancement	AUR40405 - Certificate IV in Automotive Performance Enhancement	N	Significant change to focus of qualification and elective list Core units changed from 0 to 3 units
AUR40512	Certificate IV in Vehicle Loss Assessing	Replaces AUR40511 - Certificate IV in Vehicle Loss Assessing	E	ISC update equivalent Revised qualification Qualification and unit codes recoded to meet policy requirements
AUR40612	Certificate IV in Automotive Electrical Technology		N/A	New qualification
AUR40712	Certificate IV in Automotive Body Repair Technology		N/A	New qualification
AUR40812	Certificate IV in Automotive Mechanical Overhauling	AUR40208 - Certificate IV in Automotive Technology	N	Significant change to focus of qualification and elective list
AUR50112	Diploma of Automotive Management	AUR50105 - Diploma of Automotive Management	N	Major changes to structure and focus of qualification. Core units changed from 3

Code	Qualification Title	Relationship	E/N	Comment in relationship to Training Package AUR05v4
				to 6 units Total units changed from 29 to 12 units
AUR50212	Diploma of Automotive Technology	AUR50205 - Diploma of Automotive Technology	E	Minor changes to structure and focus of qualification.
AUR50312	Diploma of Motorsport Technology	AUR50305 - Diploma of Motorsport	E	Minor changes to structure and focus of qualification. Core units changed from 4 to 3 units

### Mapping to units of competency – AUR12 Version 2.1

E= equivalent

N= not equivalent

AUR12 Version 2.1 Unit code and Title	AUR12 Version 2.0 Unit code and Title	E/N	Comment in relation to AUR12 Version 2
AURTTA1001 Remove and tag steering, suspension and brake system components	AURTTA1001 Remove and tag steering, suspension and brake system components	E	Minor typographical errors corrected
	AURVLA4001 Identify and report vehicle claim fraud indicators	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNA4001 Provide vehicle loss assessment and identify repair requirements	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNA4002 Provide vehicle total loss assessment	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.

	AURVNA4003 Review a vehicle repair quotation	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNA4004 Apply insurance industry knowledge to vehicle loss assessment	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNA4005 Inspect quality of vehicle repair work	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNA4006 Identify and value vehicle salvage	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNA4007 Apply automotive mechanical and electrical knowledge to vehicle loss assessment	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNA4008 Apply automotive body and paint knowledge to vehicle loss assessment	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNN4001 Evaluate vehicle bodywork for damage and identify repair requirements	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.
	AURVNP4001 Evaluate vehicle paintwork for damage and identify refinish requirements	N/A	Unit removed from AUR12 Release 2.0. New unit upgraded to reflect New Standards for Training Packages and placed in AUR Training Package.

**Mapping to units of competency – AUR12 Version 1.1****E= equivalent****N= not equivalent**

<b>AUR12 Version 1.1 Unit code and Title</b>	<b>AUR12 Version 1 Unit code and Title</b>	<b>E/N</b>	<b>Comment in relation to AUR12 Version 1</b>
AURLTF3001 Diagnose and repair fuel injection systems Release 2	AURLTF3001 Diagnose and repair fuel injection systems Release 1	E	Minor typographical errors corrected
AURJTD3004 Diagnose and repair motorcycle steering systems Release 2	AURJTD3004 Diagnose and repair motorcycle steering systems Release 1	E	Minor typographical errors corrected
AURTTA2010 Service and repair trailers up to 4.5 tonnes Release 2	AURTTA2010 Service and repair trailers up to 4.5 tonnes Release 1	E	Minor typographical errors corrected

**Mapping to Units of Competency AUR12 Version 1****E= equivalent****N= not equivalent**

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
	AURC341903A Apply relevant finance, leasing and insurance contracts/policies	Unit removed	N/A
	AURC456633A Investigate and assess automotive insurance claims	Unit removed	N/A
	AURC456661A Recover claim losses	Unit removed	N/A
	AURT223104A Assemble and install refrigeration systems/components	Unit removed	N/A
	AURV228630A Inspect vehicle for saleable items and determine their value	Unit removed	N/A
	AURV229603AA Apply acrylic lacquer refinishing	Unit removed	N/A

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
	materials		
AURAAA2001 Work in an automotive administration environment	AURA254280A Operate in an automotive administration environment	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAAA4002 Determine retail rates for work	AURA454516A Determine retail rates for work	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURACA2001 Establish relations with customers	AURC270421A Establish relations with customers	Unit code updated to meet policy requirements Licensing statement added to unit descriptor	E
AURACA3002 Establish customer requirements of a complex nature	AURC362721A Establish customer requirements of a complex nature	Unit code updated to meet policy requirements Licensing statement added to unit descriptor	E
AURACA3003 Build customer relations	AURC362807A Build customer relations	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAEA1001 Identify environmental requirements in an automotive workplace	AURC172003A Identify environmental regulations and best practice in a workplace or business	New unit replacing AURC172003A Performance Criteria updated to reflect sustainability	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURAEA2002 Apply environmental and sustainability best practice in an automotive workplace	AURC272003A Apply environmental regulations and best practice in a workplace or business	New unit replacing AURC272003A Performance Criteria updated to reflect sustainability	N
AURAEA3003 Monitor environmental and sustainability best practice in the automotive mechanical industry	AURT271781A Implement and monitor environmental regulations in the automotive mechanical industry	New unit replacing AURT271781A Performance Criteria updated to reflect sustainability	N
AURAEA4004 Manage environmental compliance in an automotive workplace	AURC472082A Plan and manage compliance with environmental regulations in a workplace or business	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURAF2001 Use numbers in an automotive workplace	AURC251677A Use numbers in the workplace	New unit replacing AURC251677A Performance Criteria updated to reflect automotive workplace	N
AURAF2002 Read in an automotive workplace	AURC251356A Read in the workplace	New unit replacing AURC251356A Performance Criteria updated to reflect automotive workplace	N
AURAF2003 Communicate effectively in an automotive workplace	AURC270789A Communicate effectively in the workplace	New unit replacing AURC270789A Performance Criteria updated to reflect automotive workplace	N
AURAF2004 Solve routine problems in an automotive workplace	AURC252327A Identify, clarify and resolve problems	New unit replacing AURC252327A Performance Criteria updated to reflect automotive workplace	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURFA2005 Write routine texts in an automotive workplace	AURC251179A Write routine texts in the workplace and complete automotive documentation	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURFA3008 Read and apply automotive repair instructions		New unit	N/A
AURFA5006 Prepare technical reports	AURT577520A Prepare technical reports	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURFA5007 Develop and document specifications and procedures	AURT577620A Develop and document specifications and procedures	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAKA2001 Use information technology systems	AURA254180A Operate information technology systems	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAKA3002 Adapt work processes to new	AURC361101A Adapt work processes to new technology	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
technologies		Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURALA3001 Determine legal aspects of an automotive service and repair contract	AURA354616A Determine legal aspects of an automotive service and repair contract	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAMA2001 Work effectively with others	AURC270688A Work effectively with others	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAMA2002 Communicate business information	AURC270889A Communicate business information	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAMA3003 Conduct information sessions	AURC359350A Conduct information sessions	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAMA3004 Maintain business image	AURC363337A Maintain business image	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURAMA4005 Manage complex customer issues	AURC463238B Manage complex customer issues	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation	E
AURAMA5006 Contribute to business improvement	AURC561614A Contribute to business improvement	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURANN4001 Prepare a vehicle repair quotation	AURC465349B Prepare a vehicle repair quotation	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURAQA2001 Contribute to quality work outcomes	AURC261314A Contribute to quality work outcomes	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURAQA3002 Inspect technical quality of work	AURC361230A Inspect technical quality of work	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURAQA3003 Maintain quality systems	AURC361337A Maintain quality systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor Application of the unit added Critical Aspects updated	E
AURASA1001 Apply automotive workplace safety fundamentals		New unit	N/A
AURASA2002 Apply safe working practices in an automotive workplace	AURC270103A Apply safe working practices	New unit replacing AURC270103A Performance Criteria updated to reflect automotive workplace	N
AURATA2001 Identify basic automotive faults using troubleshooting processes	AURC252103A Apply basic automotive troubleshooting processes	New unit replacing AURC252103A Performance Criteria updated to reflect automotive workplace	N
AURATA2002 Read and interpret engineering drawings	AURT225156A Read and interpret engineering drawings	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURATA2003 Produce drawings from design concepts	AURT225191A Produce drawings from design concepts	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		unit descriptor	
AURATA3004 Provide technical guidance	AURC359554A Provide technical guidance	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURATA3005 Estimate complex jobs	AURC365722A Estimate complex jobs	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURBCA2001 Work in a retail bicycle environment	AURB254380B Operate in a retail bicycle environment	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURBCA2002 Select and adjust bicycle to fit rider	AURB254401A Select and adjust bicycle to fit rider	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURBSA3001 Conduct cycling proficiency training	AURB354601A Conduct cycling proficiency training	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTA1001 Remove and tag bicycle components	AURB100064B Remove and tag bicycle components	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURBTA1002 Adjust bicycles		New unit	N/A
AURBTA2003 Assemble bicycles	AURB211304B Assemble bicycles	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURBTA2004 Assemble box bicycles for retail sale	AURB211305A Assemble box bicycle for retail sale	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURBTA3005 Restore bicycles	AURB311401A Restore a bicycle	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURBTA3006 Identify and select components for custom bicycles	AURB332301A Specify and select components for a custom bicycle	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURBTA3007 Provide mechanical support to cycling events	AURB354501A Provide mechanical support to cycling events	Unit code updated to meet policy requirements. Reference to OHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		replaced with new WHS legislation	
AURBTB2001 Service and repair bicycle mechanical braking systems	Service and repair bicycle mechanical braking systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTB2002 Service bicycle hydraulic braking systems	AURB212370B Service bicycle hydraulic braking systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTB3003 Repair bicycle hydraulic braking systems	AURB312366B Repair bicycle hydraulic braking systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTD2001 Service bicycle steering systems	AURB215672A Service bicycle steering systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTD2002 Service bicycle suspension systems	AURB216672A Service bicycle suspension systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTD3003 Repair and overhaul bicycle steering systems	AURB315646A Repair/overhaul bicycle steering systems	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURBTD3004 Repair and overhaul bicycle suspension	AURB316646A Repair/overhaul bicycle	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
systems	suspension systems	Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	
AURBTJ2001 Remove, repair and fit bicycle tyres	AURB218168B Remove, repair and fit bicycle tyres	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTJ2002 Service bicycle wheels and hubs	AURB218267A Service bicycle wheels and hubs	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTJ3003 Design and build bicycle wheels	AURB318207B Design and build bicycle wheels	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTJ3004 Repair and overhaul bicycle wheels and hubs	AURB318267A Repair/overhaul bicycle wheels and hubs	Unit code updated to meet policy requirements Minor change to unit title	E
AURBTK2001 Use and maintain specialised bicycle repair tools		New unit	N/A
AURBTQ2001 Service bicycle drivetrain systems	AURB214670B Service bicycle drivetrain systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTQ3002 Repair bicycle drivetrain systems	AURB314666B Repair bicycle drivetrain systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURBTR3001 Service electric power assist bicycles	AURB318301A Service electric power assist bicycles	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTv2001 Fit and adjust bicycle accessories	AURB232265B Fit and adjust bicycle accessories	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTY3001 Service and repair bicycle frames	AURB328267A Service and repair bicycle frames	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURBTY4002 Design and build bicycle frames	AURB428201A Design and build a bicycle frame	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURBTY4003 Assess carbon fibre frames for repair	AURB428202A Assess carbon fibre frames for repair	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURETA5001 Analyse and evaluate electrical and electronic faults in electric over-hydraulic systems	AURT575193A Analyse and evaluate electrical and electronic faults in electric over hydraulic systems	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETA5002 Analyse and	AURT575593A Analyse and	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
evaluate electrical and electronic faults in safety systems	evaluate electrical and electronic faults in safety systems	policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURETA5003 Analyse and evaluate electrical and electronic faults in monitoring and protection systems	AURT575693A Analyse and evaluate electrical and electronic faults in monitoring/protection systems	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETA5004 Analyse and evaluate electrical and electronic faults in convenience and entertainment systems	AURT575893A Analyse and evaluate electrical and electronic faults in convenience and entertainment systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETA5005 Analyse and evaluate electrical and electronic faults in theft-deterrent systems	AURT575993A Analyse and evaluate electrical and electronic faults in theft deterrent systems	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETA5006 Analyse and evaluate electrical and electronic faults in climate-control systems	AURT576193A Analyse and evaluate electrical and electronic faults in climate control systems	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		unit descriptor	
AURETB3001 Repair electric braking systems	AURE311666A Repair electric braking systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETB5002 Analyse and evaluate electrical and electronic faults in braking systems	AURT575493A Analyse and evaluate electrical and electronic faults in braking systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETD3001 Service and repair electronically controlled steering systems	AURE320871A Service and repair electronically controlled steering systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETD5002 Analyse and evaluate electrical and electronic faults in stability, steering and suspension systems	AURT575093A Analyse and evaluate electrical and electronic faults in stability/steering/suspension systems	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETE5001 Analyse and evaluate electrical and electronic faults in engine management systems	AURT575293A Analyse and evaluate electrical and electronic faults in engine management systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		unit descriptor	
AURETH3001 Depower battery electric vehicles	AURETH3001 Depower battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH3002 Service and maintain battery electric vehicles	AURETH3002 Service and maintain battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4003 Test and repair high voltage battery systems in battery electric vehicles	AURETH4003 Test and repair high voltage battery systems in battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4004 Diagnose and repair traction motor speed control device in battery electric vehicles	AURETH4004 Diagnose and repair traction motor speed control device in battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4005 Diagnose and repair high voltage traction motors in battery electric vehicles	AURETH4005 Diagnose and repair high voltage traction motors in battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4006 Diagnose and repair auxiliary motors and associated components in battery electric vehicles	AURETH4006 Diagnose and repair auxiliary motors and associated components in battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4007 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles	AURETH4007 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4008 Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles	AURETH4008 Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4009 Diagnose and repair DC to DC converters in battery electric vehicles	AURETH4009 Diagnose and repair DC to DC converters in battery electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURETH4010 Test high voltage batteries in hybrid electric vehicles	AURETH4010 Test high voltage batteries in hybrid electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4011 Deactivate and reinitialise power supply in hybrid electric vehicles	AURETH4011 Deactivate and reinitialise power supply in hybrid electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4012 Service and maintain electrical components in hybrid electric vehicles	AURETH4012 Service and maintain electrical components in hybrid electric vehicles	Reference to OHS legislation replaced with new WHS legislation	E
AURETH4014 Diagnose complex faults in battery electric and hybrid electric vehicle systems		New unit	N/A
AURETH5013 Analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems	AURT576093A Analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETK1001 Identify, select and use low voltage electrical test equipment		New unit	N/A
AURETK2002 Use and maintain automotive electrical test equipment		New unit	N/A
AURETR1001 Remove and tag automotive electrical system components	AURE100064A Remove and tag automotive electrical system components	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURETR1002 Test, service and maintain battery storage systems	AURE118671A Test, service and maintain battery storage systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR1003 Apply automotive electrical system fundamentals		New unit	E
AURETR2005 Install, test and repair electrical security systems and components	AURE219431A Install, test and repair electrical security systems/components	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR2006 Carry out soldering of electrical wiring and circuits	AURE224008A Carry out soldering of electrical wiring/circuits	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR2007 Demonstrate knowledge of automotive electrical circuits and wiring systems		New unit	N/A
AURETR2008 Remove and replace electrical units and assemblies		New unit	N/A
AURETR2009 Install, test and repair vehicle lighting	AURE219331A Install, test and repair low voltage	New unit replacing AURE219331A	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
and wiring systems	wiring/lighting systems	Performance Criteria and Range Statement updated to reflect technologies	
AURETR2010 Fabricate, test and repair wiring harnesses and looms	AURE220140A Manufacture and repair wiring harness/looms	New unit replacing AURE220140A Performance Criteria and Range Statement updated to reflect technologies	N
AURETR2011 Install and test basic ancillary electrical components	AURE219531A Install ancillary electrical components	New unit replacing AURE219531A Performance Criteria and Range Statement updated to reflect technologies	N
AURETR2012 Test and repair basic electrical circuits	AURE218708A Carry out repairs to single electrical circuits	New unit replacing AURE218708A Performance Criteria and Range Statement updated to reflect technologies	N
AURETR2013 Inspect and service charging systems		New unit	N/A
AURETR2014 Inspect and service starting systems		New unit	N/A
AURETR2015 Inspect and service batteries	AURE218670A Service, maintain or replace batteries	New unit replacing AURE218670A Performance Criteria and Range Statement updated to reflect technologies	N
AURETR2016 Read and apply vehicle wiring schematics and drawings		New unit	N/A
AURETR2035 Demonstrate knowledge of petrol and diesel engine operation		New unit	N/A
AURETR2042 Remove, refit and test electrical	AURE218764A Remove, refit and test electrical	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
componentry for operation following body repair activities	componentry for normal operation following body repair activities	Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURETR3017 Overhaul charging system alternators	AURE319145A Overhaul charging system alternators	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR3018 Overhaul starting motors	AURE319245A Overhaul starting motors	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR3019 Inspect, service and repair AC electric motor drive systems	AURE319271A Inspect, service and repair AC electric motor drive systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR3020 Repair electronic systems	AURE321066A Repair electronic systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR3021 Inspect, service and repair electronic	AURE321971A Inspect, service and repair electronic	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
management, monitoring and tracking systems	management, monitoring and tracking systems	Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	
AURETR3022 Diagnose and repair vehicle dynamic control systems	AURE321671A Service and repair electronically operated stability control systems  AURE321571A Service and repair electronically operated traction control systems  AURE321471A Service and repair electronically controlled anti-lock braking systems	New unit replacing:  AURE321671A, AURE321571A and AURE321471A  Performance Criteria and Range Statement updated to reflect technologies	N
AURETR3023 Diagnose and repair electronic spark ignition engine management systems	AURE321171A Service and repair electronic spark ignition engine management systems	New unit replacing AURE321171A  Performance Criteria and Range Statement updated to reflect technologies	N
AURETR3024 Diagnose and repair electronic compression ignition engine management systems	AURE321771A Service and repair electronic compression ignition engine management systems	New unit replacing AURE321771A  Performance Criteria and Range Statement updated to reflect technologies	N
AURETR3025 Test, charge and replace batteries	AURE218676A Test, service and charge batteries	New unit replacing AURE218676A  Performance Criteria and Range Statement updated to reflect technologies	N

<b>AUR12 v1 Unit code and Title</b>	<b>AURE05 v4 Unit code and Title</b>	<b>Comment in relation to AURE05 v4</b>	<b>E/N</b>
AURETR3026 Remove, replace and program electrical and electronic units and assemblies	AURE218664A Remove and replace electrical/electronic units/assemblies	New unit replacing AURE218664A  Performance Criteria and Range Statement updated to reflect technologies	N
AURETR3027 Install ancillary electronic control unit systems and components		New unit	N/A
AURETR3028 Diagnose and repair instruments and warning systems	AURE318966A Repair instruments and warning systems	New unit replacing AURE318966A  Performance Criteria and Range Statement updated to reflect technologies	N
AURETR3029 Diagnose and repair charging systems	AURE319166B Repair charging systems	New unit replacing AURE319166B  Performance Criteria and Range Statement updated to reflect technologies	N
AURETR3030 Diagnose and repair starting systems	AURE319266B Repair starting systems	New unit replacing AURE319266B  Performance Criteria and Range Statement updated to reflect technologies	N
AURETR3031 Diagnose and repair ignition systems	AURE320666B Repair ignition systems	New unit replacing AURE320666B  Performance Criteria and Range Statement updated to reflect technologies	N
AURETR3032 Repair electrical systems	AURE318866A Repair electrical systems	Unit code updated to meet policy requirements.  Reference to OHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		replaced with new WHS legislation Licensing statement added to unit descriptor	
AURETR3036 Service and repair electronically controlled suspension systems	AURE320971A Service and repair electronically controlled suspension systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR3043 Service and repair electronic body management systems	AURE321371A Service and repair electronic body management systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR3044 Service and repair electronic drive management systems	AURE321271A Service and repair electronic drive management systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR4004 Diagnose complex electrical and electronic faults in vehicle convenience and entertainment systems		New unit	N/A
AURETR4037 Diagnose complex electrical and electronic faults in light vehicle safety systems		New unit	N/A
AURETR4038 Diagnose complex faults in motorcycle electrical and		New unit	N/A

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
electronic systems			
AURETR4039 Diagnose complex electrical and electronic faults in light vehicle theft deterrent systems		New unit	N/A
AURETR4040 Diagnose complex electrical and electronic faults in vehicle monitoring and protection systems		New unit	N/A
AURETR5033 Develop and apply electronic systems modification	AURT576620A Develop and apply electronic systems modification	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETR5034 Develop and apply electrical systems modification	AURT576520A Develop and apply electrical systems modification	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETU2001 Install air conditioning systems	AURT222631A Install air conditioning systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURETU2002 Recover vehicle refrigerants		New unit	N/A
AURETU2003 Service air conditioning and HVAC	AURT222670A Service air conditioning systems	New unit replacing AURT222670A	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
systems		Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies	
AURETU3004 Diagnose and repair air conditioning and HVAC systems	AURT322666A Repair/retrofit air conditioning systems	New unit replacing AURT322666A  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies	N
AURETU3005 Retrofit and modify air conditioning and HVAC systems	AURT322666A Repair/retrofit air conditioning systems	New unit replacing AURT322666A  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies	N
AURETU4006 Diagnose complex faults in air conditioning and HVAC systems		New unit	N/A
AURETU4007 Overhaul air conditioning system components	AURT322645A Overhaul air conditioning system components	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURETX5001 Analyse and evaluate electrical and electronic faults in transmission and driveline systems	AURT575393A Analyse and evaluate electrical and electronic faults in transmission/driveline systems	Unit code updated to meet policy requirements.  Minor changes to unit title  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURHTA1001 Carry out heavy vehicle pre-repair		New unit	N/A

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
operations			
AURHTA2003 Remove and replace heavy commercial vehicle ancillary components and accessories		New unit	N/A
AURHTA3002 Service and repair trailers in excess of 4.5 tonnes	AURT337273A Service and repair trailers in excess of 4.5 tonnes	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURHTB3001 Repair air braking systems	AURT311166A Repair air braking systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTB3002 Diagnose and repair heavy vehicle hydraulic braking systems	AURT310166A - Repair hydraulic braking systems	New unit replacing AURT310166A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies	N
AURHTB3007 Diagnose and repair heavy vehicle electronic braking systems		New unit	N/A
AURHTB4003 Overhaul braking system components (heavy)	AURT410145BA Overhaul braking system components (heavy)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTB4004 Overhaul air braking systems and	AURT411145A Overhaul air braking systems/components	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
components		Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURHTB4006 Diagnose complex faults in heavy commercial vehicle braking systems		New unit	N/A
AURHTB5005 Analyse and evaluate heavy vehicle braking system faults	AURT571393A Analyse and evaluate heavy vehicle braking system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTD2001 Inspect and service heavy commercial vehicle suspension systems		New unit	N/A
AURHTD3002 Repair steering systems (heavy vehicle)	AURTH315166A Repair steering systems (heavy vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTD3003 Repair suspension systems (heavy vehicle)	AURTH316166A Repair suspension systems (heavy vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTD3004 Carry out wheel alignment operations	AURTH317108A Carry out wheel alignment operations	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
(heavy vehicle)	(heavy vehicle)	Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	
AURHTD4006 Diagnose complex faults in heavy commercial vehicle steering and suspension systems		New unit	N/A
AURHTD5005 Analyse and evaluate heavy vehicle steering and suspension system faults	AURT571093A Analyse and evaluate heavy vehicle steering and suspension system faults	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURHTE2001 Remove and install heavy vehicle engine assemblies	AURT201164A Remove and install engine assemblies	New unit replacing AURT201164A  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies	N
AURHTE3002 Repair engines and associated engine components (heavy vehicle)	AURTH301166A Repair engines and associated engine components (heavy vehicle)	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURHTE4003 Diagnose complex faults in heavy vehicle diesel engines		New unit	N/A
AURHTE5004 Analyse and evaluate heavy vehicle engine and fuel system faults	AURT571293A Analyse and evaluate heavy vehicle engine and fuel system faults	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation Licensing statement added to unit descriptor	
AURHTF2001 Inspect heavy commercial vehicle fuel systems and components		New unit	N/A
AURHTJ1001 Inspect heavy commercial vehicle wheels and tyres		New unit	N/A
AURHTJ2002 Select heavy vehicle tyres and rims for specific applications	AURT317968A Identify and fit tyres and rims for specific applications (heavy) and AURT217985A Fit tyres and rims for specific applications (heavy)	New unit replacing AURT317968A and AURT217985A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies	N
AURHTJ2003 Remove, inspect, and refit heavy vehicle wheel assemblies	AURT217665A - Remove, fit and inspect wheel assemblies	New unit replacing AURT217665A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies	N
AURHTJ2004 Demount, inspect, repair and mount agricultural equipment tyres and tubes		New unit	N/A
AURHTJ2006 Remove, inspect, repair and fit tyres and tubes (heavy)	AURT217966A Remove, inspect, repair and fit tyres and tubes (heavy)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURHTJ3005 Identify and apply pneumatic wheeled traction performance enhancement systems (heavy vehicle)	AURT309627A Identify and apply pneumatic wheeled traction performance enhancement systems (heavy vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTL4001 Inspect, repair and diagnose alternative fuel systems for heavy vehicle engines	AURTH404584A Inspect, repair and diagnose alternative fuel systems for heavy vehicle engines	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTQ2001 Inspect heavy commercial vehicle driveline components		New unit	N/A
AURHTQ3002 Repair final drive assemblies (heavy vehicle)	AURTH312666A Repair final drive assemblies (heavy vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTQ3003 Repair final drive – driveline (heavy vehicle)	AURTH313166A Repair final drive – driveline (heavy vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTR3005 Diagnose and repair heavy trailer electronically controlled roll stability systems		New unit	N/A

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURHTX3001 Repair transmissions – manual (heavy vehicle)	AURTH306666A Repair transmissions – manual (heavy vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTX3002 Inspect, test and replace transmissions - automatic (heavy vehicle)	AURTH307165A Inspect, test and replace transmissions - automatic (heavy vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTX3003 Repair transmissions - automatic (heavy vehicle)	AURTH307166A Repair transmissions - automatic (heavy vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURHTX3004 Diagnose and repair heavy vehicle clutch systems	AURT306170A Inspect, service and/or repair clutch assemblies and associated operating system components	New unit replacing AURT306170A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies	N
AURHTX4006 Diagnose complex faults in heavy commercial vehicle transmission and driveline systems		New Unit	N/A
AURHTX5005 Analyse and evaluate heavy vehicle transmission system faults	AURT571193A Analyse and evaluate heavy vehicle transmission system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation Licensing statement added to unit descriptor	
AURHTY2001 Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes		New unit	N/A
AURHTY3002 Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes		New unit	N/A
AURHTZ3001 Diagnose and repair heavy vehicle emission control systems	AURT304666A Repair and replace emission control systems	New unit replacing AURT304666A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies	N
AURJTA1001 Perform minor adjustments to motorcycles		New unit	N/A
AURJTA1002 Remove and replace motorcycle components and accessories		New unit	N/A
AURJTA5003 Analyse and evaluate motorcycle engine and transmission system faults	AURT573193A Analyse and evaluate motorcycle engine and transmission system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURJTB3001 Diagnose and repair motorcycle braking systems	AURT310166A - Repair hydraulic braking systems	New unit replacing AURT310166A Performance Criteria, Range Statement and Critical Aspects	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		of Evidence updated to reflect modern motorcycle technologies	
AURJTB5002 Analyse and evaluate motorcycle braking system faults	AURT573393A Analyse and evaluate motorcycle braking system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURJTD2001 Inspect and service motorcycle suspension systems		New unit	N/A
AURJTD2002 Inspect and service motorcycle steering systems		New unit	N/A
AURJTD3003 Diagnose and repair motorcycle suspension systems	AURTM316166A Repair suspension systems (motorcycle)	New unit replacing AURTM316166A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern motorcycle technologies	N
AURJTD3004 Diagnose and repair motorcycle steering systems	AURTM315166A Repair steering systems (motorcycle)	New unit replacing AURTM315166A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern motorcycle technologies	N
AURJTD4005 Diagnose complex faults in motorcycle steering and suspension systems		New unit	N/A
AURJTD5006 Analyse and evaluate motorcycle steering, suspension and	AURT573093A Analyse and evaluate motorcycle steering, suspension and frame system	Unit code updated to meet policy requirements. Reference to OHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
frame system faults	faults	replaced with new WHS legislation Licensing statement added to unit descriptor	
AURJTE3001 Diagnose and repair motorcycle engines		New unit	N/A
AURJTE4002 Diagnose complex faults in motorcycle engine and transmission systems		New unit	N/A
AURJTJ2001 Remove, inspect and fit motorcycle wheel assemblies		New unit	N/A
AURJTQ2001 Inspect and service motorcycle driveline systems		New unit	N/A
AURJTQ3002 Diagnose and repair motorcycle driveline systems		New unit	N/A
AURJTR5001 Analyse and evaluate motorcycle electrical and electronic system faults	AURT573293A Analyse and evaluate motorcycle electrical/electronic system faults	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURJTX3001 Diagnose and repair motorcycle clutch systems	AURT306170A Inspect, service and/or repair clutch assemblies and associated operating system components	New unit replacing AURT306170A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern motorcycle technologies	N
AURJTX3002 Diagnose and repair motorcycle		New unit	N/A

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
manual transmissions			
AURJTX3003 Diagnose and repair motorcycle automatic transmissions		New unit	N/A
AURJTY3001 Repair and align motorcycle frames	AURV328166A Repair and align motorcycle frames	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURKTA3001 Synchronise plant and equipment	AURT300373A Synchronise plant/equipment	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURKTA3002 Inspect, service and repair harvesting equipment	AURT300471B Inspect, service and repair harvesting equipment	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURKTA3003 Inspect, service and repair crop planting and seeding equipment	AURT300571A Inspect, service and repair crop planting and seeding equipment	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURKTA3004 Inspect, service and repair spraying	AURT300671A Inspect, service and repair spraying	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
and spreading equipment	and spreading equipment	Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	
AURKTA3005 Inspect, service and repair tracked type drive and support systems	AURT316271A Inspect, service and repair tracked type drive and support systems	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURKTA4009 Diagnose complex faults in mobile plant hydraulic systems		New unit	N/A
AURKTA5006 Analyse and evaluate tracked mobile plant transmission, steering and braking systems faults	AURT572393A Analyse and evaluate tracked mobile plant transmission, steering and braking systems faults	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURKTA5007 Analyse and evaluate mobile plant hydraulic system faults	AURT572693A Analyse and evaluate mobile plant hydraulic system faults	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURKTB3001 Diagnose and repair mobile plant braking systems		New unit	N/A
AURKTB4003 Diagnose complex faults in mobile plant braking systems		New unit	N/A

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURKTB5002 Analyse and evaluate wheeled mobile plant braking system faults	AURT572593A Analyse and evaluate wheeled mobile plant braking system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURKTD3001 Diagnose and repair mobile plant suspension systems		New unit	N/A
AURKTD3002 Diagnose and repair mobile plant steering systems		New unit	N/A
AURKTD4005 Diagnose complex faults in mobile plant steering and suspension systems		New unit	N/A
AURKTD5003 Analyse and evaluate wheeled mobile plant steering and suspension system faults	AURT572093A Analyse and evaluate wheeled mobile plant steering and suspension system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURKTD5004 Analyse and evaluate tracked mobile plant undercarriage and suspension system faults	AURT572493A Analyse and evaluate tracked mobile plant undercarriage and suspension system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURKTE5001 Analyse and evaluate mobile plant engine and fuel system faults	AURT572293A Analyse and evaluate mobile plant engine and fuel system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Licensing statement added to unit descriptor	
AURKTQ3001 Diagnose and repair mobile plant final drive assemblies		New unit	N/A
AURKTR3001 Diagnose and repair electric-over-hydraulic control systems		New unit	N/A
AURKTX3001 Diagnose and repair powershift transmissions		New unit	N/A
AURKTX4003 Diagnose complex faults in mobile plant transmission systems		New unit	N/A
AURKTX5002 Analyse and evaluate wheeled mobile plant transmission system faults	AURT572193A Analyse and evaluate wheeled mobile plant transmission system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLLD3001 Determine compliance of steering and suspension modifications	AURT316316A Determine compliance of steering and suspension modifications	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTA1001 Apply automotive mechanical system fundamentals		New unit	N/A
AURLTB3003 Diagnose and repair light vehicle hydraulic braking systems	AURT310166A Repair hydraulic braking systems	New unit replacing AURT310166A Performance Criteria, Range Statement and Critical Aspects	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		of Evidence updated to reflect modern light vehicle technologies	
AURLTB4001 Overhaul braking system components (light)	AURT410145AA Overhaul braking system components (light)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTB4004 Diagnose complex faults in light vehicle braking systems		New unit	N/A
AURLTB5002 Analyse and evaluate light vehicle braking system faults	AURT570393A Analyse and evaluate light vehicle braking system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTD3001 Select and install performance enhanced suspension system products	AURT316168A Select and install performance enhanced suspension system products	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTD3002 Service and rectify faults in lift assisted suspension systems	AURT316171A Service and rectify faults in lift assisted suspension systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTD3003 Reset steering system alignment	AURT317172A Reset steering system alignment	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
adjustments to customer specifications	adjustments to customer specifications	Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	
AURLTD3004 Repair steering systems (light vehicle)	AURTL315166A Repair steering systems (light vehicle)	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURLTD3005 Repair suspension systems (light vehicle)	AURTL316166A Repair suspension systems (light vehicle)	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURLTD3006 Carry out wheel alignment operations (light vehicle)	AURTL317108A Carry out wheel alignment operations (light vehicle)	Unit code updated to meet policy requirements.  Minor changes to unit title  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURLTD4009 Diagnose complex faults in light vehicle steering and suspension systems		New unit	N/A
AURLTD5007 Analyse and evaluate light vehicle steering and suspension system faults	AURT570093A Analyse and evaluate light vehicle steering and suspension system faults	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Licensing statement added to unit descriptor	
AURLTE2001 Remove and install light vehicle engine assemblies	AURT201164A Remove and install engine assemblies	New unit replacing AURT201164A  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies	N
AURLTE3002 Repair engines and associated engine components (light vehicle)	AURTL301166A Repair engines and associated engine components (light vehicle)	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURLTE4004 Diagnose complex faults in light vehicle petrol engines		New unit	N/A
AURLTE4005 Diagnose complex faults in light vehicle diesel engines		New unit	N/A
AURLTE5003 Analyse and evaluate light vehicle engine and fuel system faults	AURT570293A Analyse and evaluate light vehicle engine and fuel system faults	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURLTF3001 Diagnose and repair mechanical fuel injection systems	AURT303166B Repair petrol fuel systems	New unit replacing AURT303166B  Performance Criteria, Range Statement and Critical Aspects of Evidence reflect mechanical fuel injection technologies	N
AURLTJ2001 Select tyres	AURT217668A Select tyres	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
and rims for specific applications (light)	and rims for specific applications (light)	policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURLTJ2002 Remove, inspect, repair and fit tyres and tubes (light)	AURT217766A Remove, inspect, repair and fit tyres and tubes (light)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTJ2003 Remove, inspect, and refit light vehicle wheel assemblies	AURT217665A Remove, fit and inspect wheel assemblies	Unit replacing AURT217665A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies	N
AURLTJ3004 Provide advice on the effects of wheel and tyre combinations	AURT318054A Provide advice on the effects of wheel and tyre combinations	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTQ3001 Repair final drive assemblies (light vehicle)	AURTL312666A Repair final drive assemblies (light vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTQ3002 Repair final drive – driveline (light vehicle)	AURTL313166A Repair final drive – driveline (light vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		replaced with new WHS legislation Licensing statement added to unit descriptor	
AURLTQ5003 Analyse and evaluate light vehicle driveline system faults	AURT570193A Analyse and evaluate light vehicle driveline system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTX3001 Repair transmissions - manual (light vehicle)	AURTL306666A Repair transmissions - manual (light vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTX3002 Repair transmissions - automatic (light vehicle)	AURTL307166A Repair transmissions - automatic (light vehicle)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURLTX3003 Diagnose and repair light vehicle clutch systems	AURT306170A Inspect, service and/or repair clutch assemblies and associated operating system components	New unit replacing AURT306170A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies	N
AURLTX4004 Diagnose complex faults in light vehicle transmission and driveline systems		New unit	N/A

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURLTZ3001 Diagnose and repair light vehicle emission control systems	AURT304666A Repair and replace emission control systems	New unit replacing AURT304666A  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies	N
AURMBA2001 Transport a light competition vehicle and support equipment	AURM240173A Transport a light competition vehicle and support equipment	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E
AURMBA3002 Load and unload a competition vehicle and support equipment	AURM340205A Load and unload a competition vehicle and support equipment	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E
AURMCA5001 Manage motorsport team media liaison	AURM542538A Manage motorsport team media liaison	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURMCA5002 Manage motorsport team promotional partnerships and marketing	AURM542638A Manage motorsport team promotional partnerships and marketing	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURMDA2001 Develop and update motorsport industry knowledge	AURMO2001A Develop and update motorsport industry knowledge	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURMDA2002 Assist with motorsport officiating duties	AURMO2004A Assist with motorsport officiating duties	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMDA3004 Recover a motorsport vehicle	AURMO3007A Recover a motorsport vehicle	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMDA3005 Act as a marshal in a motorsport event	AURMO3006A Act as a marshal in a motorsport event	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMDA3006 Communicate using flags and signals in a motorsport event	AURMO3003A Communicate using flags and signals	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURMDA3007 Act as a steward in a motorsport event	AURMO3005A Act as a steward in a motorsport event	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMGA2001 Set up and dismantle temporary work location and equipment	AURM240172B Set up and dismantle temporary work location and equipment	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURMGA4002 Manage personal presentation and	AURM441538B Manage personal presentation and	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
development	development	Reference to OHS legislation replaced with new WHS legislation	
AURMKA4001 Manage motorsport data	AURM441438B Manage motorsport data acquisition	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	N
AURMLA2001 Comply with motorsport rules and regulations when officiating	AURMO2003A Comply with motorsport rules and regulations when officiating	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMLA3002 Monitor compliance with motorsport rules and regulations	AURMO3002A Monitor compliance with motorsport rules and regulations	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMLA3003 Inspect motorsport vehicles and equipment for compliance	AURMO3004A Inspect motorsport vehicles and equipment for compliance	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMMA2001 Operate in a motorsport environment	AURM240080B Operate in a motorsport environment	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMMA3007 Follow motorsport event and team safety requirements	AURM340175A Follow motorsport event and team safety requirements	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMMA3008 Coordinate operations of a motorsport	AURM340710B Coordinate operations of a motorsport	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
team	team	policy requirements. Reference to OHS legislation replaced with new WHS legislation	
AURMMA4002 Manage the preparation of a competition vehicle	AURM441638B Manage the preparation of a competition vehicle	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMMA5003 Manage motorsport operations	AURM542338A Manage motorsport operations	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURMMA5004 Manage motorsport team development	AURM542438A Manage motorsport team development	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURMMA5005 Manage team pit lane and service area operations	AURM542738A Manage team pit lane/service area operations	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURMMA5006 Prepare and implement race strategies	AURM542849A Prepare and implement race strategies	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Licensing statement added to unit descriptor	
AURMSA2001 Follow motorsport safety and risk management procedures	AURMO2002A Follow motorsport safety and risk management procedures	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMSA3002 Implement and monitor safety and risk management in a motorsport environment	AURMO3001A Implement and monitor safety and risk management in a motorsport environment	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTA2001 Prepare and service a light competition vehicle	AURM240174A Prepare and service a light competition vehicle	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTA3002 Assemble and prepare a competition vehicle	AURM340204B Assemble and prepare a competition vehicle	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTA3004 Perform competition vehicle preparation procedures at an event	AURM340851B Perform competition vehicle preparation procedures at an event	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTA3005 Perform pit lane and service area operations	AURM340951B Perform pit lane and service area operations	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURMTA3006 Perform torquing and fastening	AURM341051B Perform torquing and fastening	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation	
AURMTA3007 Conduct non-destructive testing	AURM340550B Conduct non-destructive testing	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTA3009 Collect and log motorsport data	AURM340312B Collect and log motorsport data	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTA5003 Determine material suitability for competition vehicle components	AURM542216A Determine material suitability for competition vehicle component construction	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURMTA5008 Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles	AURM542103A Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURMTD4001 Test suspension dampers using a dynamometer	AURM442076B Test suspension dampers using a dynamometer	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTD4002 Prepare competition vehicle suspension	AURM441749B Prepare competition vehicle suspension	Unit code updated to meet policy requirements. Reference to OHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		replaced with new WHS legislation	
AURMTE4001 Test engines using a dynamometer	AURM441976B Test engines using a dynamometer	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTF4001 Analyse and repair complex performance carburetted fuel systems	AURM441394A Analyse and repair complex performance carburetted fuel systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Changes to pre-requisites	E
AURMTF4002 Analyse and repair performance fuel injection systems	AURM441395A Analyse and repair performance fuel injection systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTJ4001 Select and prepare tyres and wheels for motorsport applications	AURM441868B Select and prepare tyres and wheels for motorsport applications	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTQ4001 Analyse and repair complex performance driveline systems	AURM441293B Analyse and repair complex performance driveline systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURMTS3001 Construct hose and pipe assemblies for competition vehicles	AURM340607B Construct hose and pipe assemblies for competition vehicles	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURNTA3001 Inspect, service and repair lift truck	AURT300771A Inspect, service and repair lift truck	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
mast assemblies	mast assemblies	Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	
AURPTA1001 Carry out pre-repair operations to outdoor power equipment		New unit	N/A
AURPTA1002 Perform minor adjustments to outdoor power equipment		New unit	N/A
AURPTA2003 Service and repair rotary cutting systems	AURP245171B Service and repair rotary cutting systems	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E
AURPTA2004 Service and repair drum cutting systems	AURP245271B Service and repair drum cutting systems	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E
AURPTA2005 Service and repair chainsaw cutting systems	AURP245371B Service and repair chainsaw cutting systems	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E
AURPTA2006 Service line trimming systems and components	AURP245465B Service line trimming systems and components	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E
AURPTA2007 Service and repair post-boring systems	AURP245571B Service and repair post-boring systems	Unit code updated to meet policy requirements.  Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURPTA2008 Service and repair post-hole digging systems	AURP245671B Service and repair post-hole digging systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURPTA2009 Service and repair reciprocating cutting systems	AURP245771B Service and repair reciprocating cutting systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURPTA2010 Service pumping systems	AURP247670B Service pumping systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURPTA3011 Repair pumping systems	AURP347666B Repair pumping systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURPTE2002 Service engines and engine components (outdoor power equipment)	AURP201570B Service engines and engine components (outdoor power equipment)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURPTE3003 Repair engines and engine components (outdoor power equipment)	AURP301566B Repair engines and engine components (outdoor power equipment)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURPTE4004 Overhaul engines and engine components (outdoor power equipment)	AURP401245B Overhaul engines and engine components (outdoor power equipment)	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURPTR2002 Test and service outdoor electric powered equipment	AURE222976B Test and service outdoor electric powered equipment	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURPTR3001 Test and service 240V portable generators	AURP322776B Test and service 240V portable generators	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing / Regulatory Information updated	E
AURREA2001 Apply environmental and sustainability best practice in a marine workplace	AURR271103A Apply environmental regulations in the marine service industry	New unit replacing AURR271103A Performance Criteria updated to reflect sustainability	N
AURREA3002 Monitor environmental and sustainability best practice in the marine mechanical industry	AURR371181A Implement and monitor environmental regulations in the marine repair industry	New unit replacing AURR371181A Performance Criteria updated to reflect sustainability	N
AURREA4004 Manage environmental compliance in a marine workplace	AURR471182A Plan and manage compliance with environmental regulations in the marine service and repair industry	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURRGA3001 Launch and recover a vessel using a trailer	AURR346336A Launch and recover a vessel using a trailer	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRGA3002 Launch and recover a vessel from crane,	AURR346435B Launch and recover vessel from crane,	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
gantry and forklift	gantry and forklift	policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	
AURRGA3003 Moor a motor-driven vessel	AURR346543A Moor a motor driven vessel	Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation	E
AURRTA2001 Service deck, hull and cabin equipment	AURR246870B Service deck, hull and cabin equipment	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTA3002 Carry out hull repairs	AURR346108B Carry out hull repairs	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTA3003 Winterise vessel and engine systems	AURR346650A Winterise vessel and engine systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTA3004 Recommission vessel systems	AURR346660B Recommission vessel systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTA3005 Repair deck, hull and cabin equipment	AURR346866B Repair deck, hull and cabin equipment	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation	
AURRTA3006 Water test a vessel	AURR346931A Water test a vessel	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTA5007 Analyse and evaluate light marine hydraulic system faults	AURT573593A Analyse and evaluate light marine hydraulic system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURRTA5008 Analyse and evaluate light marine hull performance and stability system faults	AURT573893A Analyse and evaluate light marine hull performance and stability system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURRTD3001 Diagnose and repair marine steering systems	AURR346267A Diagnose and repair marine steering systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTE1001 Prepare outboard engines for wet-run testing		New unit	N/A
AURRTE2002 Service outboard engines and components	AURR201103A Service outboard engines and components	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTE2003 Service inboard engines and	AURR201104A Service inboard engines and	Unit code updated to meet policy requirements.	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
components	components	Reference to OHS legislation replaced with new WHS legislation	
AURRTE3005 Diagnose and repair marine electrical systems and components	AURE320066B Diagnose and repair marine electrical systems and components	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTE3006 Diagnose and repair outboard engines and components	AURR301102A Diagnose and repair outboard engines and components	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTE3007 Diagnose and repair inboard engines and components	AURR301105A Diagnose and repair inboard engines and components	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTE3008 Install marine engines, controls and instruments	AURR346131B Install marine engines, controls and instruments	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTE3009 Recommission marine engine systems	AURR346760B Recommission marine engine systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTE3010 Water test engines in tanks	AURR346975B Water test engines in tanks	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTE4011 Overhaul two and four cycle outboard engines	AURR401103A Overhaul two and four cycle outboard engines	Unit code updated to meet policy requirements. Reference to OHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		replaced with new WHS legislation	
AURRTE5012 Analyse and evaluate light marine engine and powerhead system faults	AURT573793A Analyse and evaluate light marine engine and powerhead system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURRTQ2001 Service inboard propeller drive systems	AURR213670A Service inboard propeller drive systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTQ2002 Service jet drive propulsion systems	AURR214170B Service jet drive propulsion systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTQ3003 Install inboard propeller drive systems	AURR313631A Install inboard propeller drive systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTQ3004 Diagnose and repair inboard propeller drive systems	AURR313684B Diagnose and repair inboard propeller drive systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTQ3005 Install jet drive propulsion systems	AURR314131B Install jet drive propulsion systems	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTQ3006 Diagnose and repair jet drive	AURR314166B Diagnose and repair jet drive propulsion	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
propulsion systems	systems	policy requirements. Reference to OHS legislation replaced with new WHS legislation	
AURRTR1001 Inspect, service and maintain marine battery storage systems		New unit	N/A
AURRTR3002 Install marine electronic systems and components	AURE321831B Install marine electronic systems and components	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTR3003 Test, diagnose and repair marine electronic systems and components	AURE321832A Test, diagnose and repair marine electronic systems and components	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTR3004 Install marine electrical systems and components	AURE320031B Install marine electrical systems and components	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTX2001 Service marine outboard and stern drive transmissions	AURR207670B Service marine outboard and stern drive transmissions	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTX2002 Service marine inboard transmissions	AURR207770B Service marine inboard transmissions	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTX3003 Diagnose and repair marine outboard and stern drive transmissions	AURR307684B Diagnose and repair marine outboard and stern drive transmissions	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation	
AURRTX3004 Diagnose and repair marine inboard transmissions	AURR307784B Diagnose and repair marine inboard transmissions	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation	E
AURRTX5005 Analyse and evaluate light marine transmission system faults	AURT573693A Analyse and evaluate light marine transmission system faults	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSAA2001 Process customer complaints	AURS252290A Process customer complaints	Unit code updated to meet policy requirements. Licensing statement added to unit descriptor	E
AURSAA2002 Maintain customer aftermarket relations		New unit	N/A
AURSBA2001 Carry out warehousing procedures	AURS239508A Carry out warehousing procedures	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSBA3002 Apply automotive parts interpretation process	AURS338103A Apply automotive parts interpretation process	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSCA2001 Select	AURS238127A Identify and	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
automotive parts and products	select automotive parts and products	policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURSCA2002 Present stock and sales area	AURS238150A Present stock and sales area	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSCA2003 Apply sales procedures	AURS241303A Apply sales procedures	Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSCA2004 Carry out cash, credit and funds transfers	AURS241608A Carry out cash and/or credit/funds transfer transactions	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSCA2005 Sell products	AURS241769A Sell product(s)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURSCA2006 Promote products and services	AURS242621A Promote products and services	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSCA3007 Determine used motor vehicle stock requirements	AURS338216A Determine used motor vehicle stock requirements	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSCA3008 Wholesale used motor vehicle stock	AURS342369A Wholesale used motor vehicle stock	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSCA3009 Provide vehicle technology information		New unit	N/A
AURSCA3010 Appraise and purchase used motor vehicles to supplement stock for sale	AURS344330A Inspect, appraise and purchase used motor vehicles to supplement stock for sale	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURSCP2001 Provide information to customers on automotive refinishing products	AURS238154A Provide information to customers on automotive refinishing products	Unit code updated to meet policy requirements Minor change to unit title	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURSLA2001 Apply legal requirements relating to product sales	AURS241803A Apply legal requirements relating to product sales	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTEA4001 Manage environmental compliance in the mechanical repair industry	AURT471782A Plan and manage compliance with environmental regulations in the mechanical repair industry	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTGA3001 Drive and manoeuvre trailers	AURT337119A Drive and manoeuvre trailer(s)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTNA5001 Estimate and calculate costs to repair, maintain or modify a vehicle	AURT577727B Estimate and calculate costs to repair, maintain or modify a vehicle	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation	E
AURTTA1001 Remove and tag steering, suspension and	AURT100164A Remove and tag steering, suspension and	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
brake system components	brake system components	policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	
AURTTA1002 Carry out workshop practice activities	AURT100308A Carry out workshop practice activities	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURTTA1003 Use and maintain basic measuring devices	AURT125667A Use and maintain basic measuring devices	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURTTA2004 Carry out servicing operations	AURT200108A Carry out servicing operations	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURTTA2005 Select and use bearings, seals, gaskets, sealants and adhesives	AURT200368A Select and use bearings, seals, gaskets, sealants and adhesives	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURTTA2006 Service hydraulic systems	AURT209170A Service hydraulic systems	Unit code updated to meet policy requirements	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURTTA2007 Inspect, service and repair pneumatic systems	AURT209671A Inspect, service and repair pneumatic systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA2008 Produce patterns and templates	AURT225291A Produce patterns and templates	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA2009 Carry out pre-repair operations (mechanical)	AURT226008A Carry out pre-repair operations (mechanical)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA2010 Service and repair trailers up to 4.5 tonnes	AURT237272A Service and repair trailers up to 4.5 tonnes	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation	E
AURTTA3011 Install hydraulic systems to specified applications	AURT309131B Install hydraulic systems to specified applications	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Licensing statement added to unit descriptor	
AURTTA3012 Manufacture and install fluid power hose assemblies	AURT309140A Manufacture and install fluid power hose assemblies	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA3013 Repair hydraulic systems	AURT309166A Repair hydraulic systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA3014 Assemble and install pneumatic systems and components	AURT309604A Assemble and install pneumatic systems/components	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA3015 Prepare engineering drawings	AURT325149A Prepare engineering drawings	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA3017 Carry out vehicle safety and roadworthy inspections	AURT365508A Carry out vehicle safety/roadworthy inspection	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation Licensing statement added to unit descriptor	
AURTTA3018 Carry out diagnostic procedures	AURT366108A Carry out diagnostic procedures	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA3019 Carry out advanced diagnostic procedures	AURT366308A Carry out advanced diagnostic procedures	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA3020 Apply heat-induction processes		New unit	N/A
AURTTA4021 Carry out diagnosis of complex system faults	AURT466208A Carry out diagnosis of complex system faults	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA4025 Diagnose complex faults in vehicle integrated stability control systems		New unit	N/A
AURTTA4026 Diagnose complex faults in vehicle electric-over-hydraulic systems		New unit	N/A
AURTTA5022 Develop and apply mechanical system	AURT574020A Develop and apply mechanical systems	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
modifications	modification	policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURTTA5023 Develop and apply hydraulic system modifications	AURT574120A Develop and apply hydraulic systems modification	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTA5024 Develop and apply pneumatic system modifications	AURT574220A Develop and apply pneumatic systems modification	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTB2001 Inspect and service braking systems	AURT210170A Inspect and service braking systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTB2002 Attach friction materials and radius grind	AURT210605A Attach friction materials and radius grind	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		unit descriptor	
AURTTB2003 Machine brake drums and brake disc rotors	AURT210736A Machine brake drums and brake disc rotors	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTB2004 Inspect and service air braking systems	AURT211170A Inspect and service air braking systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTB3005 Assemble and fit braking systems and components	AURT310104A Assemble and fit braking systems/components	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTB3006 Inspect, service and repair auxiliary braking systems	AURT310171A Inspect, service and repair auxiliary braking systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTC2001 Inspect and service cooling systems	AURT202170B Inspect and service cooling systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURTTC2002 Carry out radiator repairs	AURT202608A Carry out radiator repairs	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTC3003 Diagnose and repair cooling systems	AURT202166B Repair cooling systems	New unit replacing AURT202166B Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern technologies	N
AURTTD2001 Inspect steering systems	AURT215130A Inspect steering systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTD2002 Inspect and service steering systems	AURT215170A Inspect and service steering systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTD2003 Inspect suspension systems	AURT216130A Inspect suspension systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTD2004 Inspect and service suspension systems	AURT216170A Inspect and service suspension systems	Unit code updated to meet policy requirements	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURTTD4005 Overhaul steering system components	AURT415145A Overhaul steering system components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTE1003 Remove and tag engine system components	AURT100064A Remove and tag engine system components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTE2004 Inspect and service engines	AURT201170A Inspect and service engines	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTE3001 Apply knowledge of engine science	AURTTE3001 Apply knowledge of engine science	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTE4005 Overhaul engines and associated engine components	AURT401145A Overhaul engines and associated engine components	Unit code updated to meet policy requirements Reference to OHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		replaced with new WHS legislation Licensing statement added to unit descriptor	
AURTTTF2001 Service petrol fuel systems	AURT203170B Service petrol fuel systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTTF2002 Service diesel fuel injection systems	AURT203670B Service diesel fuel injection systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation	E
AURTTTF3004 Repair diesel fuel injection systems	AURT303666A Repair diesel fuel systems	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTTF3005 Inspect and repair engine forced induction systems	AURT305671A Inspect and repair engine forced induction systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTTF3006 Diagnose and repair petrol carburettor systems	AURT303166B Repair petrol fuel systems	New unit replacing AURT303166B Performance Criteria, Range Statement and Critical Aspects of Evidence reflect carburettor	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		technologies	
AURTTTF4003 Overhaul diesel fuel injection systems	AURT403645A Overhaul diesel fuel injection systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTTF4007 Overhaul petrol fuel system components	AURT403145B Overhaul petrol fuel system components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTTJ2001 Balance wheels and tyres	AURT217606A Balance wheels and tyres	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTTJ2002 Remove and refit wheel hubs and associated brake components	AURT217865A Remove and refit wheel hubs and associated brake components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTTK2001 Use and maintain measuring equipment in an automotive workplace	AURT225667A Use and maintain measuring equipment	New unit replacing AURT225667A Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURTTK2002 Use and maintain workplace tools and equipment	AURT270278A Use and maintain workplace tools and equipment	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTL3001 Service CNG fuel systems	AURT304370A Service CNG fuel systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTL3002 Diagnose and repair CNG fuel systems	AURT304366A Repair CNG fuel systems  AURT404384A Diagnose CNG fuel system faults	New unit replacing AURT304366A and AURT404384A  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies	N
AURTTL3003 Install CNG fuel systems	AURT304331A Install CNG fuel systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTL3004 Service LNG fuel systems	AURT304470A Service LNG fuel systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTL3005 Diagnose	AURT304466A Repair LNG	New unit replacing	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
and repair LNG fuel systems	fuel systems  AURT404484A Diagnose LNG fuel system faults	AURT304466A and AURT404484A  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies	
AURTTTL3006 Install LNG fuel systems	AURT304431A Install LNG fuel systems	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURTTTL3007 Service LPG fuel systems	AURT304270A Service LPG fuel systems	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURTTTL3008 Diagnose and repair LPG fuel systems	AURT304266A Repair LPG fuel systems  AURT404284A Diagnose LPG fuel system faults	New unit replacing AURT304266A and AURT404284A  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies	N
AURTTTL3009 Install LPG fuel systems	AURT304231A Install LPG fuel systems	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURTTTL3010 Install LPG, CNG and LNG electrical control equipment	AURT304031A Install LPG/CNG electrical control equipment	New unit replacing AURT304031A  Performance Criteria, Range	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Statement and Critical Aspects of Evidence updated to reflect technologies and to include LNG technology	
AURTTL4011 Diagnose complex faults in CNG fuel systems		New unit	N/A
AURTTL4012 Diagnose complex faults in LNG fuel systems		New unit	N/A
AURTTL4013 Diagnose complex faults in LPG fuel systems		New unit	N/A
AURTTL5014 Analyse and evaluate gas fuel system faults	AURT477093A Analyse and evaluate gas fuel system faults	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTL5015 Develop and apply gas fuel system modifications	AURT577120A Develop and apply gas fuel systems modification	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTM3001 Operate and monitor computer numerical control machines	AURTTM3001 Operate and monitor computer numerical control machines	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3002 Repair bearing tunnels and connecting rods in engines	AURTTM3002 Repair bearing tunnels and connecting rods in engines	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3003 Apply metal to rebuild engine	AURTTM3003 Apply metal	Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
components	to rebuild engine components	legislation	
AURTTM3004 Assemble engine blocks and sub-assemblies	AURTTM3004 Assemble engine blocks and sub-assemblies	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3005 Balance rotating and reciprocating engine components	AURTTM3005 Balance rotating and reciprocating engine components	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3006 Perform advanced machining and blueprinting of engine components	AURTTM3006 Perform advanced machining and blueprinting of engine components	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3007 Carry out grinding operations	AURTTM3007 Carry out grinding operations	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3008 Dismantle and evaluate engine blocks and sub-assemblies	AURTTM3008 Dismantle and evaluate engine blocks and sub-assemblies	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3009 Fit sleeves and bore and hone engine cylinders	AURTTM3009 Fit sleeves and bore and hone engine cylinders	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3010 Heat treat, straighten and reclaim engine components	AURTTM3010 Heat treat, straighten and reclaim engine components	Reference to OHS legislation replaced with new WHS legislation	E
AURTTM3011 Recondition engine cylinder heads	AURTTM3011 Recondition engine cylinder heads	Reference to OHS legislation replaced with new WHS legislation	E
AURTTQ2001 Service final drive assemblies	AURT212670A Service final drive assemblies	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURTTQ2002 Remove and refit driveline components	AURT213165A Remove and refit driveline components	Unit code updated to meet policy requirements	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURTTQ2003 Service final drive (driveline)	AURT213170A Service final drive (driveline)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTQ4004 Overhaul final drive assemblies	AURT412645A Overhaul final drive assemblies	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTR4001 Diagnose complex faults in engine management systems		New unit	N/A
AURTTTS2001 Fabricate exhaust system and components	AURT205123A Fabricate exhaust system/components	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTW2001 Carry out soft soldering techniques	AURV223808A Carry out soft soldering techniques	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		unit descriptor	
AURTTW3002 Set, operate and monitor specialist machines	AURT334972A Set, operate and monitor specialist machines	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTW3003 Carry out machining operations	AURT335108A Carry out machining operations	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTX1001 Remove and tag transmission system components	AURT100264A Remove and tag transmission system components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTX2002 Inspect and service transmissions (manual)	AURT206670A Inspect and service transmissions (manual)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTX2003 Inspect and service transmissions (automatic)	AURT207170A Inspect and service transmissions (automatic)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURTTX2004 Service transmissions (hydrostatic)	AURT208170A Service transmissions (hydrostatic)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTX2005 Inspect and service clutch systems		New unit	N/A
AURTTX3006 Repair transmissions (hydrostatic)	AURT308166A Repair transmissions (hydrostatic)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTX4007 Overhaul clutch assemblies	AURT406145A Overhaul clutch assemblies	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTX4008 Overhaul transmissions (manual)	AURT406645A Overhaul transmissions (manual)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTX4009 Overhaul transmissions (automatic)	AURT407145A Overhaul transmissions (automatic)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		unit descriptor	
AURTTX4010 Overhaul transmissions (hydrostatic)	AURT408145A Overhaul transmissions (hydrostatic)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTX4011 Overhaul torque converters		New unit	N/A
AURTTY3001 Repair chassis, frame and associated components	AURV328366A Repair chassis/frame and associated components	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTZ2001 Inspect and service emission control systems	AURT204670A Inspect and service emission control systems	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURTTZ2002 Repair exhaust system components	AURT205166A Repair exhaust system components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVEN2001 Apply environmental regulations and best practice in the body	AURV271403A Apply environmental regulations and best practice in the body	Unit code updated to meet policy requirements Reference to OHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
repair industry	repair industry	replaced with new WHS legislation Licensing statement added to unit descriptor	
AURVEN3002 Monitor environmental and sustainability best practice in the automotive body repair industry	AURV371481A Implement and monitor environmental regulations and best practice in the body repair industry	New unit replacing AURV371481A Performance Criteria updated to effect sustainability	N
AURVEN4003 Plan and manage compliance with environmental regulations in the body repair industry	AURV471482A Plan and manage compliance with environmental regulations in the body repair industry	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVGA3001 Determine vehicle rescue method and costs	AURV328916A Determine vehicle rescue method and ascertain cost	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVGA3002 Recover vehicles	AURV328961A Recover vehicle	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVLA4001 Identify and report vehicle claim fraud indicators	AURVLA4001 Identify and report vehicle claim fraud indicators	Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURVLN2001 Apply legal requirements for vehicle dismantlers	AURV228603A Apply legal requirements for vehicle dismantlers	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVNA4001 Provide vehicle loss assessment and identify repair requirements	AURVNA4001 Provide vehicle loss assessment and identify repair requirements	Reference to OHS legislation replaced with new WHS legislation	E
AURVNA4002 Provide vehicle total loss assessment	AURVNA4002 Provide vehicle total loss assessment	Reference to OHS legislation replaced with new WHS legislation	E
AURVNA4003 Review a vehicle repair quotation	AURVNA4003 Review a vehicle repair quotation	Reference to OHS legislation replaced with new WHS legislation	E
AURVNA4004 Apply insurance industry knowledge to vehicle loss assessment	AURVNA4004 Apply insurance industry knowledge to vehicle loss assessment	Reference to OHS legislation replaced with new WHS legislation	E
AURVNA4005 Inspect quality of vehicle repair work	AURVNA4005 Inspect quality of vehicle repair work	Reference to OHS legislation replaced with new WHS legislation	E
AURVNA4006 Identify and value vehicle salvage	AURVNA4006 Identify and value vehicle salvage	Reference to OHS legislation replaced with new WHS legislation	E
AURVNA4007 Apply automotive mechanical and electrical knowledge to vehicle loss assessment	AURVNA4007 Apply automotive mechanical and electrical knowledge to vehicle loss assessment	Reference to OHS legislation replaced with new WHS legislation	E
AURVNA4008 Apply automotive body and paint knowledge to vehicle loss assessment	AURVNA4008 Apply automotive body and paint knowledge to vehicle loss assessment	Reference to OHS legislation replaced with new WHS legislation	E
AURVNN4001 Evaluate vehicle bodywork for	AURVNN4001 Evaluate vehicle bodywork for damage	Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
damage and identify repair requirements	and identify repair requirements	legislation	
AURVNP4001 Evaluate vehicle paintwork for damage and identify refinish requirements	AURVNP4001 Evaluate vehicle paintwork for damage and identify refinish requirements	Reference to OHS legislation replaced with new WHS legislation	E
AURVTA2001 Prepare vehicle, components and equipment for customer use	AURV231649A Prepare vehicle/component/equipment for customer use	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTA3002 Remove and replace supplementary restraint systems	AURV327164A Remove and replace supplementary restraint systems (SRS)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTA3003 Inspect paint, trim and accessories and recommend repair procedures	AURV465230A Inspect paint, trim and accessories and ascertain recommended repair procedures	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTA3004 Inspect vehicle systems and determine preferred repair action	AURT365130A Inspect vehicle systems and determine preferred repair action	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		unit descriptor	
AURVTG2001 Repair laminated glass	AURV233166A Repair laminated glass	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTG2002 Remove and install rubber glazed windscreens	AURV233363A Remove and install rubber glazed windscreens	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTG2003 Remove and install butyl sealed windscreens	AURV233463A Remove and install butyl sealed windscreens	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTG2004 Remove and install direct glazed windscreens	AURV233563A Remove and install direct glazed windscreens	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTG2005 Remove and install framed type windscreens	AURV233663A Remove and install framed type windscreens	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURVTG2006 Apply window tinting	AURV233849A Prepare surfaces and apply window tinting	Unit code updated to meet policy requirements Minor change to unit title	E
AURVTG2007 Clean glass surfaces		New unit	N/A
AURVTG3008 Cut and process flat laminated glass	AURV333215A Cut and process flat laminated glass	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTG3009 Remove and install fixed body glass	AURV333763A Remove and install fixed body glass	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTG3010 Remove and install movable body glass	AURV333863A Remove and install movable body glass	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTG3011 Install side windows	AURV334031A Install side windows	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTG3012 Remove and install heavy vehicle rubber	AURV334163A Remove and install rubber and urethane	Unit code updated to meet policy requirements	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
and urethane glazed windcreens	(heavy vehicle) glazed windcreens	Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURVTG3013 Remove and install large vehicle windcreens	AURV334263A Remove and install large vehicle windcreens	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTK2001 Use and maintain vehicle body repair hand tools		New unit	N/A
AURVTN1001 Remove and tag vehicle body system components	AURV100064A Remove and tag vehicle body system components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2002 Carry out panel repairs	AURV225908A Carry out panel repairs	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2003 Carry out pre-repair vehicle body operations	AURV226108A Carry out pre-repair operations (vehicle body)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Licensing statement added to unit descriptor	
AURVTN2004 Remove, replace and realign bolt-on panels, sections and fittings	AURV226864A Remove, replace and realign bolt-on panels, sections and fittings	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2005 Remove and fit protector mouldings, transfers and decals	AURV226965A Remove and replace/fit protector mouldings, transfers and decals	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2006 Remove and replace mechanical units and assemblies	AURV227064A Remove and replace mechanical units/assemblies	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2007 Remove salvageable components	AURV228662A Remove salvageable components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2008 Clean vehicle body and door cavities	AURV231786AA Wash/clean vehicle body and door cavities	Unit code updated to meet policy requirements Minor change to unit title	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURVTN2009 Clean vehicle engine and engine compartment	AURV231786BA Wash/clean vehicle engine and engine compartment	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2010 Clean vehicle underbody	AURV231786CA Wash/clean vehicle underbody	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2011 Remove and install rear vision mirrors	AURV233163A Remove and install rear vision mirrors	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2030 Service air compressors and air lines	AURT222170A Service air compressors and air lines	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURVTN2033 Service, repair and replace air compressors and components	AURT222171A Service, repair and replace air compressors/components	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN2037 Disassemble and test vehicle units and components	AURV228617A Disassemble and test vehicle units/components	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3012 Install vehicle sunroofs	AURV324431A Install vehicle sunroofs	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3013 Carry out paint-less dent repairs	AURV325808A Carry out paint-less dent repairs	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3014 Repair body panels by beating and split repair	AURV326266AA Repair body panels (beating and split repair)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation Licensing statement added to unit descriptor	
AURVTN3015 Repair body panels using metal finishing techniques	AURV326266BA Repair body panels (metal finishing)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3016 Repair body panels incorporating filler	AURV326266CA Repair body panels (incorporating filler)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3017 Repair body panels and thermoplastic components	AURV326266DA Repair body panels/components (thermoplastic)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3018 Repair and replace structural damage by welding	AURV326366AB Repair and replace structural damage (welding)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURVTN3019 Repair and replace structural damage by riveting	AURV326366BA Repair/replace structural damage (riveting)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3020 Replace major welded panels	AURV326367B Replace major welded panels	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3021 Repair body components using lead wiping	AURV326466A Repair body components using lead wiping	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3022 Repair vehicle body misalignment	AURV326508A Repair vehicle body misalignment	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3023 Remove and replace adhesive bonded panels and structures	AURV326964A Remove and replace adhesive bonded panels and structures	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURVTN3024 Install vehicle body component seals	AURV327231A Install vehicle body component seals	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3025 Repair corroded panels and components	AURV327366A Repair corroded panels and components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3026 Repair aluminium body panels (finishing)	AURV327466AA Repair aluminium body panels (finishing)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3027 Repair aluminium body panels (filling)	AURV327466BA Repair aluminium body panels (filling)	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTN3028 Identify and repair high strength steel components		New unit	N/A
AURVTN3029 Set up and operate universal measuring systems		New unit	N/A
AURVTN3031 Conduct	AURV326708A Carry out	New unit replacing	N

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
major sectional repairs	major sectional repair	AURV326708A  Performance Criteria and Range Statement updated to reflect repairs to vehicle body skirt and rails	
AURVTN3035 Apply original equipment manufacturer repair procedures		New unit	N/A
AURVTN4032 Determine vehicle damage and recommended repair procedures	AURV465116A Determine vehicle damage and recommended repair procedures	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTN5034 Evaluate and select bodywork materials, equipment and processes	AURT577394A Evaluate and select bodywork materials, equipment and processes	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTP2001 Apply paint removal methods	AURV229503A Apply paint removal methods	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTP2002 Carry out masking procedures	AURV229608A Carry out masking procedures	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Licensing statement added to unit descriptor	
AURVTP2003 Prepare spray painting materials and equipment	AURV229749A Prepare spray painting materials and equipment	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP2004 Apply fundamental colour matching techniques	AURV229803AA Apply fundamental colour matching techniques	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP2005 Apply rust prevention and sound deadening materials	AURV230203A Apply rust prevention and sound deadening materials	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP2006 Prepare vehicle components for paint repairs	AURV230349A Prepare vehicle components for paint repairs	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP2007 Apply paint touch-up techniques	AURV230449A Apply paint touch-up techniques	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		unit descriptor	
AURVTP2008 Clean and polish vehicle exterior paint	AURV231809CA Clean and polish vehicle exterior paint	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP2009 Apply vehicle body film wrapping		New unit	N/A
AURVTP2026 Carry out basic airbrush application techniques	AURV232208A Carry out fundamental airbrush application techniques	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP2027 Carry out custom graphics design and layout techniques	AURV232108A Carry out custom graphics design and layout techniques	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP3010 Prepare spray booths and paint drying equipment	AURV329549A Prepare spray booths and paint drying equipment	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP3011 Apply solid acrylic enamel refinishing materials using two	AURV329603BA Apply solid acrylic enamel refinishing materials (two component	Unit code updated to meet policy requirements Minor change to unit title	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
component systems	system)	Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	
AURVTP3012 Apply air dry and polyurethane enamel refinishing materials	AURV329603DA Apply air dry and polyurethane enamel refinishing materials	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTP3013 Prepare substrate for refinishing	AURV329649A Prepare substrate for refinishing	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTP3014 Apply multi-layer and clear over-base colour matching techniques	AURV329803BA Apply multi layer/clear over base colour matching techniques	Unit code updated to meet policy requirements  Minor change to unit title  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E
AURVTP3015 Apply solid colour matching techniques	AURV329803CA Apply solid colour matching techniques	Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURVTP3016 Carry out paint rectification and touch-up work for solids using two component systems	AURV329903AA Carry out paint rectification and touch up work for solids (two component system)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP3017 Carry out paint rectification and touch-up work for clear over base using two component systems	AURV329903BA Carry out paint rectification and touch up work for clear over base (two component system)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP3018 Carry out paint rectification for multi-layer and pearl using two component systems	AURV329903CA Carry out paint rectification and touch up work for multi layer/pearl (two component system)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP3019 Prepare and paint plastic components	AURV330149A Prepare and paint plastic components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP3020 Carry out denibbing, buffing and polishing	AURV330508A Carry out denibbing, buffing and polishing	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation Licensing statement added to unit descriptor	
AURVTP3021 Restore vehicle exterior paint	AURV331987A Restore vehicle exterior paint	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP3022 Carry out custom painting techniques	AURV332308A Carry out custom painting techniques	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTP3023 Mix and apply clear over-base refinishing materials in two-component systems	AURV329603CA Apply clear over base refinishing materials (two component system)	New unit replacing AURV329603CA Elements and Performance Criteria updated to reflect mixing of paint products	N
AURVTP3024 Mix and apply clear over-base multi-layer pearl refinishing materials	AURV329603EA Apply clear over base multi layer/pearl refinishing materials	New unit replacing AURV329603EA  Elements and Performance Criteria updated to reflect mixing of paint products	N
AURVTP3025 Mix and apply water-based refinishing materials	AURV329603FA Apply water based refinishing materials	New unit replacing AURV329603FA  Elements and Performance Criteria updated to reflect mixing of paint products	N
AURVTS2006 Carry out fabrication of components	AURV224508A Carry out fabrication of components	Unit code updated to meet policy requirements	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURVTS3001 Carry out wood working operations for fabrication	AURV324708A Carry out wood working operations for fabrication	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTS3002 Repair plugs, moulds, frames and flooring using wood materials	AURV324766A Repair plugs, moulds, frames and flooring using wood materials	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTS3003 Fabricate composite material components	AURV324823A Fabricate composite material components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTS3004 Repair fibreglass and composite material components	AURV324866A Repair fibreglass/composite material components	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTS3005 Fabricate vehicle body panels and		New unit	N/A

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
components			
AURVTT2001 Carry out sewing repairs and alterations	AURV230608A Carry out sewing repairs and alterations	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT2002 Carry out trim repairs and alterations	AURV230708A Carry out trim repairs and alterations	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT2003 Remove and replace vehicle interior trim components	AURV230864A Remove and replace vehicle interior trim components	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT2004 Trim vehicle components	AURV231208A Carry out trimming of vehicle components	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT2005 Select and apply trim and fabric materials	AURV231268A Select and apply trim/fabric materials and determine attachment methods	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation Licensing statement added to unit descriptor	
AURVTT2006 Select and apply trim and fabric adhesives	AURV231368A Select and apply trim/fabric adhesives	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT2007 Clean and finish plastic trim and fittings	AURV231809AA Clean and finish plastic trim and fittings	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT2008 Clean and finish vehicle interior trim and seats	AURV231809BA Clean and finish vehicle interior trim and seats	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT2009 Remove and replace seats and internal fittings	AURV231964A Remove and replace seats and internal fittings	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT3010 Remove and replace vehicle head lining	AURV330964A Remove and replace vehicle head lining	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		legislation Licensing statement added to unit descriptor	
AURVTT3011 Repair seat frames	AURV331066A Repair seat frames	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT3012 Carry out sewing operations	AURV331108A Carry out sewing operations	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT3013 Fabricate loose and fitted covers	AURV331423AA Fabricate and install loose and fitted covers	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT3014 Fabricate marine covers	AURV331423BA Fabricate and install marine covers	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT3015 Fabricate canvas products	AURV331423CA Fabricate and install canvas products	Unit code updated to meet policy requirements	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
		Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURVTT3016 Fabricate frame structures	AURV331423DA Fabricate and install frame structures	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT3017 Fabricate and install floor coverings	AURV331423EA Fabricate and install floor coverings	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT3018 Fabricate and install soft top hoods	AURV331423FA Fabricate and install hoods (soft tops)	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTT3019 Fabricate and install canopies and curtains	AURV331423GA Fabricate and install canopies and curtains	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
AURVTT3020 Select and use leather in trimming		New unit	N/A
AURVTT3021 Select and use adhesives		New unit	N/A
AURVTV2001 Remove, replace, fit and test components and accessories	AURV232165A Remove, replace, fit and test components/accessories	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTW2001 Carry out manual metal arc welding procedures	AURV281108A Carry out manual metal arc welding procedures	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTW2002 Carry out brazing procedures	AURV281208A Carry out brazing procedures	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTW2003 Carry out gas metal arc welding procedures	AURV281308A Carry out gas metal arc (MIG) welding procedures	Unit code updated to meet policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTW2004 Carry out	AURV281408A Carry out gas	Unit code updated to meet	E

<b>AUR12 v1 Unit code and Title</b>	<b>AUR05 v4 Unit code and Title</b>	<b>Comment in relation to AUR05 v4</b>	<b>E/N</b>
gas tungsten arc welding procedures	tungsten arc (TIG) welding procedures	policy requirements Minor change to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	
AURVTW2005 Carry out spot welding procedures	AURV281508A Carry out spot welding procedures	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTW2007 Conduct oxy-acetylene, thermal heating and cutting		New unit	N/A
AURVTW2008 Carry out oxy acetylene welding, thermal cutting and thermal heating procedures	AURV223608A Carry out oxy acetylene welding, thermal cutting and thermal heating procedures	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E
AURVTW3006 Carry out thermoplastic welding procedures	AURV323908A Carry out thermoplastic welding procedures	Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor	E

## Overview

### What is a Training Package?

A Training Package is an integrated set of nationally endorsed competency standards, assessment guidelines and Australian Qualifications Framework (AQF) qualifications for a specific industry, industry sector or enterprise.

Each Training Package:

- provides a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enables nationally recognised qualifications to be awarded through direct assessment of workplace competencies
- encourages the development and delivery of flexible training which suits individual and industry requirements
- encourages learning and assessment in a work-related environment which leads to verifiable workplace outcomes.

### How do Training Packages fit within the National Skills Framework?

The National Skills Framework applies nationally, is endorsed by the Ministerial Council for Vocational and Technical Education, and comprises the Australian Quality Training Framework 2010 (AQTF 2010), and Training Packages endorsed by the National Quality Council (NQC).

### How are Training Packages developed?

Training Packages are developed by Industry Skills Councils or enterprises to meet the identified training needs of specific industries or industry sectors. To gain national endorsement of Training Packages, developers must provide evidence of extensive research, consultation and support within the industry area or enterprise.

### How do Training Packages encourage flexibility?

Training Packages describe the skills and knowledge needed to perform effectively in the workplace without prescribing how people should be trained.

Training Packages acknowledge that people can achieve vocational competency in many ways by emphasising what the learner can do, not how or where they learned to do it. For example, some experienced workers might be able to demonstrate competency against the units of competency, and even gain a qualification, without completing a formal training program.

With Training Packages, assessment and training may be conducted at the workplace, off-the-job, at a training organisation, during regular work, or through work experience, work placement, work simulation or any combination of these.

### Who can deliver and assess using Training Packages?

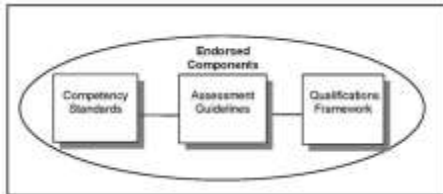
Training and assessment using Training Packages must be conducted by a Registered Training Organisation (RTO) that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO, as specified in the AQTF 2010.

### Training Package Components

Training Packages are made up of mandatory components endorsed by the NQC, and optional support materials.

## Training Package Endorsed Components

The nationally endorsed components include the Competency Standards, Assessment Guidelines and Qualifications Framework. These form the basis of training and assessment in the Training Package and, as such, they must be used.



### **Competency Standards**

Each unit of competency identifies a discrete workplace requirement and includes the knowledge and skills that underpin competency as well as language, literacy and numeracy; and occupational health and safety requirements. The units of competency must be adhered to in training and assessment to ensure consistency of outcomes.

### **Assessment Guidelines**

The Assessment Guidelines provide an industry framework to ensure all assessments meet industry needs and nationally agreed standards as expressed in the Training Package and the AQTF 2010. The Assessment Guidelines must be followed to ensure the integrity of assessment leading to nationally recognised qualifications.

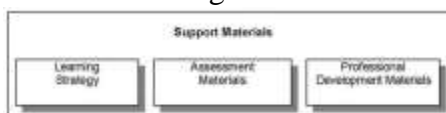
### **Qualifications Framework**

Each Training Package provides details of those units of competency that must be achieved to award AQF qualifications. The rules around which units of competency can be combined to make up a valid AQF qualification in the Training Package are referred to as the 'packaging rules'. The packaging rules must be followed to ensure the integrity of nationally recognised qualifications issued.

### **Training Package Support Materials**

The endorsed components of Training Packages are complemented and supported by optional support materials that provide for choice in the design of training and assessment to meet the needs of industry and learners.

Training Package support materials can relate to single or multiple units of competency, an industry sector, a qualification or the whole Training Package. They tend to fall into one or more of the categories illustrated below.



Training Package support materials are produced by a range of stakeholders such as RTOs, individual trainers and assessors, private and commercial developers and Government agencies.

## Training Package, Qualification and Unit of Competency Codes

There are agreed conventions for the national codes used for Training Packages and their components. Always use the correct codes, exactly as they appear in the Training Package, **and with the code always before the title.**

### Training Package Codes

Each Training Package has a unique five-character national code assigned when the Training Package is endorsed, for example XYZ08. The first three characters are letters identifying the Training Package industry coverage and the last two characters are numbers identifying the year of endorsement.

### Qualification Codes

Within each Training Package, each qualification has a unique eight-character code, for example XYZ10108. Qualification codes are developed as follows:

- the first three letters identify the Training Package;
- the first number identifies the qualification level (noting that, in the qualification titles themselves, arabic numbers are **not** used);
- the next two numbers identify the position in the sequence of the qualification at that level; and
- the last two numbers identify the year in which the qualification was endorsed. (Where qualifications are added after the initial Training Package endorsement, the last two numbers may differ from other Training Package qualifications as they identify the year in which those particular qualifications were endorsed.)

### Unit of Competency Codes

Within each Training Package, each unit of competency has a unique code. Unit of competency codes are assigned when the Training Package is endorsed, or when new units of competency are added to an existing endorsed Training Package. Unit codes are developed as follows:

- a typical code is made up of 12 characters, normally a mixture of uppercase letters and numbers, as in AURAAA2001
- the first three characters signify the Training Package – Automotive Industry Retail, Service and Repair Training Package – in the above example and up to eight characters, relating to an industry sector, function or skill area, follow;
- the last character is always a letter and identifies the unit of competency version. An ‘A’ at the end of the code indicates that this is the original unit of competency. ‘B’, or another incremented version identifier means that minor changes have been made. Typically this would mean that wording has changed in the range statement or evidence guide, providing clearer intent; and
- where changes are made that alter the outcome, a new code is assigned and the title is changed.

## Training Package, Qualification and Unit of Competency Titles

There are agreed conventions for titling Training Packages and their components. Always use the correct titles, exactly as they appear in the Training Package, and with the code always placed before the title.

### **Training Package Titles**

The title of each endorsed Training Package is unique and relates the Training Packages broad industry coverage.

### **Qualification Titles**

The title of each endorsed Training Package qualification is unique. Qualification titles use the following sequence:

- first, the qualification is identified as either Certificate I, Certificate II, Certificate III, Certificate IV, Diploma, Advanced Diploma, Vocational Graduate Certificate, or Vocational Graduate Diploma;
- this is followed by the words 'in' for Certificates I to IV, and 'of' for Diploma, Advanced Diploma, Vocational Graduate Certificate and Vocational Graduate Diploma;
- then, the industry descriptor, for example Telecommunications; and
- then, if applicable, the occupational or functional stream in brackets, for example (Computer Systems).

For example: AUR10112 Certificate I in Automotive Vocational Preparation.

### **Unit of Competency Titles**

Each unit of competency title is unique. Unit of competency titles describe the competency outcome concisely, and are written in sentence case.

For example: AURFA2001 Use numbers in an automotive workplace

### **Introduction to the AUR12 Automotive Industry Retail, Service and Repair Training Package**

Qualification requirements are such that flexibility occurs whilst providing rigor in the core competencies of a qualification to ensure clear occupational outcomes. Logical qualification pathways for individual industry sectors through to Diploma level have been identified that ensure coverage of advanced levels in technology and management.

Environmental units of competency have been developed to ensure an increase in complexity and responsibility through AQF levels while exposure to key environmental considerations is included in all qualifications.

While every attempt was made to provide consistency in numbers of units across each AQF level within the various sectors, this was simply not possible. Some variation does exist but this is justified following agreement from key stakeholders that the groups of units of competency cover the level and breadth of the occupations that the qualifications serve.

Overall, the number of qualifications is 56, with the number of automotive-specific units of competency being 618. The number of imported units of competency is 97.

Specific VET in Schools and pre-apprenticeship qualifications have been developed in this Training Package, with the focus being on industry ‘taster’ and foundation skills units of competency. It was the strong opinion of industry that there needed to be qualifications for VET in Schools and pre-apprenticeship that had a strong emphasis on providing an understanding of the industry and preparing individuals to successfully transition to work. It was felt that qualifications in the past had focused on credit transfer rather than vocational preparation.

Significant changes have been made to the unit of competency codes. The unit codes now consist of 10 characters; for example AURETH3001. The first three characters signify the Training Package – AUR12 Automotive Industry Retail, Service and Repair Training Package. The fourth character, the industry sector, E – Electrical. The fifth and sixth character identifies the areas, TH – Technical – Hybrid Vehicle and Battery Electric Vehicle. The seventh character, the AQF level of the qualification where the unit of competency first appears, 3 – AQF3. The last three characters identifies the position in the sequence of competencies in the same industry sector, 001 - the first unit in the sequence.

The table below describes the new codes used for the units of competency.

#### Unit of Competency Code Descriptor

Field of Competency		Sector – First Letter		Area – Second Letter	
Common	AURA	Administration	A	Not assigned	A
Bicycle	AURB	Support and Logistics	B	Brakes	B
Electrical	AURE	Sales and Marketing	C	Cooling Systems	C
Manufacturing - Passenger Vehicle	AURF	Officiating	D	Steering and Suspension	D
Manufacturing - Bus, Truck and Trailer	AURG	Environment	E	Engines	E
Mechanical - Heavy Vehicle	AURH	Foundation Skills	F	Fuel systems	F
Mechanical - Motorcycle	AURJ	Not Assigned	G	Glazing	G
Mechanical – Mobile Plant	AURK	Information Technology	K	Hybrid Vehicle and Battery Electric Vehicle	H
Mechanical - Light Vehicle	AURL	Regulatory or Legal	L	Wheels and Tyres	J
Motorsport	AURM	Management, Leadership and Supervision	M	Tools and Equipment	K

Field of Competency		Sector – First Letter		Area – Second Letter	
Mechanical - Lifting Equipment	AURN	Loss Assessment or Repair Quoting	N	Alternative Fuels	L
Outdoor Power Equipment	AURP	Quality	Q	Manufacture	M
Marine	AURR	Health and Safety	S	Body	N
Sales and Parts, Administration and Management	AURS	Technical	T	Paint	P
Mechanical Miscellaneous	AURT			Driveline and Final Drives	Q
Vehicle Body	AURV			Electrical and Electronic	R
				Fabrication	S
				Trimming and Upholstery	T
				Air Conditioning and HVAC	U
				Accessories	V
				Welding, Grinding, Machining and Soldering	W
				Transmission	X
				Chassis and Frame	Y
				Emission and Exhaust	Z

## **Benefits of the Retail, Service and Repair Training Package**

- Focuses on outcomes, not delivery methods.
- Provides a framework for the recognition of employee skills regardless of how those skills were developed.
- Provides transferable, recognised qualifications across industry and states/territories.
- Assists industry to develop job profiles.
- Assists training organisations and employers to design training plans.
- Enables access to New Apprenticeship arrangements in sectors and occupations not previously covered.
- Assists training and assessment providers to develop training resources to achieve nationally recognised outcomes
- Provides clear qualifications pathways
- Aligns to contemporary occupational job roles and titles.

## **Introduction to the Industry**

### **Automotive Industry Retail, Service and Repair**

The Automotive Industry Retail, Service and Repair (RS&R) Training Package is one of three Automotive Industry Training Packages:

1. AUM Automotive Manufacturing Training Package Version 1 (new standards)
2. AUR Automotive Industry Retail, Service and Repair Training Package Version 1 (new standards)
3. AUR12 Automotive Industry Retail, Service and Repair Training Package Version 2.

The automotive industry is crucial to Australia's economy. Australia is only one of thirteen countries with the capability to design, engineer and produce vehicles from start to finish. The Australian vehicle market is also one of the most open and competitive in the world.

The automotive industry encompasses a wide range of activities including:

- Motor Vehicle and Motor Vehicle Parts Manufacturing
- Motor Vehicle and Motor Vehicle Parts Wholesaling
- Automotive Retailing, Servicing and Repair
- Fuel Retailing
- Supply of Aftermarket Equipment
- Vehicle Recycling and Disposal
- Motorsport
- Outdoor Power Equipment
- Agricultural Machinery and Equipment
- Bicycles
- Recreational Boating

Annual turnover in aggregate for the automotive industry is estimated at approximately \$208.1 billion for 2010-11. This is largely comprised of sales and service income. The largest portion of annual turnover is recorded by the Motor Vehicle and Parts Retailing sector at \$61 billion, followed by Motor Vehicle and Parts Wholesaling (\$49.1 billion) and Fuel Retailing (\$37 billion).

Total employment within the automotive industry for the 2011-12 financial year is estimated at 371,590 people. The majority of these people (129,500 or 34.9%) are employed within Automotive Repair and Maintenance. This is followed by Motor Vehicle and Parts Retailing (96,500 or 26%) and Motor Vehicle and Parts Manufacturing (49,500 or 13.3%).

Victoria has the largest number of people employed in the automotive industry (100,000 people) followed by New South Wales (90,000 people) and Queensland (64,750). The ACT and the Northern Territory have the smallest automotive workforces (2,750 and 3,500 people respectively).

This Training Package is aimed at satisfying the training needs of RS&R sector of the automotive industry, including occupational areas covering:

Automotive Retailing, Servicing and Repair

- Fuel Retailing
- Supply of Aftermarket Equipment
- Vehicle Recycling and Disposal
- Motorsport
- Outdoor Power Equipment
- Agricultural Machinery and Equipment
- Bicycles
- Recreational Boating.

This Training Package covers the breadth of the automotive retail service and repair industry and related areas mentioned above.

On average more than 1,000,000 new vehicles have been sold in Australia every year since 2006, with car registrations having increased by over 2,000,000 in the same time period. This is placing immense pressure on the skill requirements of those involved in service, maintenance and repair.

# Qualifications Framework

## Qualifications Framework

### The Australian Qualifications Framework

#### What is the Australian Qualifications Framework?

A brief overview of the Australian Qualifications Framework (AQF) follows. For a full explanation of the AQF, see the *AQF Implementation Handbook*.

[http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF\\_Handbook\\_07.pdf](http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF_Handbook_07.pdf)

The AQF provides a comprehensive, nationally consistent framework for all qualifications in post-compulsory education and training in Australia. In the vocational education and training (VET) sector it assists national consistency for all trainees, learners, employers and providers by enabling national recognition of qualifications and Statements of Attainment.

Training Package qualifications in the VET sector must comply with the titles and guidelines of the AQF. Endorsed Training Packages provide a unique title for each AQF qualification which must always be reproduced accurately.

#### Qualifications

Training Packages can incorporate the following eight AQF qualifications.

- Certificate I in ...
- Certificate II in ...
- Certificate III in ...
- Certificate IV in ...
- Diploma of ...
- Advanced Diploma of ...
- Vocational Graduate Certificate of ...
- Vocational Graduate Diploma of ...

On completion of the requirements defined in the Training Package, a Registered Training Organisation (RTO) may issue a nationally recognised AQF qualification. Issuance of AQF qualifications must comply with the advice provided in the *AQF Implementation Handbook* and the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

#### Statement of Attainment

A Statement of Attainment is issued by a Registered Training Organisation when an individual has completed one or more units of competency from nationally recognised qualification(s)/courses(s). Issuance of Statements of Attainment must comply with the advice provided in the current *AQF Implementation Handbook* and the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Under the AQTF 2010, RTOs must recognise the achievement of competencies as recorded on a qualification or Statement of Attainment issued by other RTOs. Given this, recognised competencies can progressively build towards a full AQF qualification.

#### AQF Guidelines and Learning Outcomes

The *AQF Implementation Handbook* provides a comprehensive guideline for each AQF qualification. A summary of the learning outcome characteristics and their distinguishing features for each VET related AQF qualification is provided below.

#### Certificate I

*Characteristics of Learning Outcomes*

Breadth, depth and complexity of knowledge and skills would prepare a person to perform a defined range of activities most of which may be routine and predictable.

Applications may include a variety of employment related skills including preparatory access and participation skills, broad-based induction skills and/or specific workplace skills. They may also include participation in a team or work group.

*Distinguishing Features of Learning Outcomes*

Do the competencies enable an individual with this qualification to:

- demonstrate knowledge by recall in a narrow range of areas;
- demonstrate basic practical skills, such as the use of relevant tools;
- perform a sequence of routine tasks given clear direction
- receive and pass on messages/information.

**Certificate II***Characteristics of Learning Outcomes*

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of operations to be applied.

Performance of a prescribed range of functions involving known routines and procedures and some accountability for the quality of outcomes.

Applications may include some complex or non-routine activities involving individual responsibility or autonomy and/or collaboration with others as part of a group or team.

*Distinguishing Features of Learning Outcomes*

Do the competencies enable an individual with this qualification to:

- demonstrate basic operational knowledge in a moderate range of areas;
- apply a defined range of skills;
- apply known solutions to a limited range of predictable problems;
- perform a range of tasks where choice between a limited range of options is required;
- assess and record information from varied sources;
- take limited responsibility for own outputs in work and learning.

**Certificate III***Characteristics of Learning Outcomes*

Breadth, depth and complexity of knowledge and competencies would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available.

Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgement is required in the selection of equipment, services or contingency measures and within known time constraints.

Applications may involve some responsibility for others. Participation in teams including group or team co-ordination may be involved.

*Distinguishing Features of Learning Outcomes*

Do the competencies enable an individual with this qualification to:

- demonstrate some relevant theoretical knowledge
- apply a range of well-developed skills
- apply known solutions to a variety of predictable problems
- perform processes that require a range of well-developed skills where some discretion and judgement is required
- interpret available information, using discretion and judgement
- take responsibility for own outputs in work and learning
- take limited responsibility for the output of others.

## **Certificate IV**

### *Characteristics of Learning Outcomes*

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature. Performance of a broad range of skilled applications including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills. Applications involve responsibility for, and limited organisation of, others.

### *Distinguishing Features of Learning Outcomes*

- Do the competencies enable an individual with this qualification to:
- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts
- apply solutions to a defined range of unpredictable problems
- identify and apply skill and knowledge areas to a wide variety of contexts, with depth in some areas
- identify, analyse and evaluate information from a variety of sources
- take responsibility for own outputs in relation to specified quality standards
- take limited responsibility for the quantity and quality of the output of others.

## **Diploma**

### *Characteristics of Learning Outcomes*

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgment is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

*Distinguishing Features of Learning Outcomes*

Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas
- analyse and plan approaches to technical problems or management requirements
- transfer and apply theoretical concepts and/or technical or creative skills to a range of situations
- evaluate information, using it to forecast for planning or research purposes
- take responsibility for own outputs in relation to broad quantity and quality parameters
- take some responsibility for the achievement of group outcomes.

**Advanced Diploma***Characteristics of Learning Outcomes*

Breadth, depth and complexity involving analysis, design, planning, execution and evaluation across a range of technical and/or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/guidance functions related to products, services, operations or procedures. The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

*Distinguishing Features of Learning Outcomes*

Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of specialised knowledge with depth in some areas
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions
- generate ideas through the analysis of information and concepts at an abstract level
- demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills
- demonstrate accountability for personal outputs within broad parameters
- demonstrate accountability for personal and group outcomes within broad parameters.

**Vocational Graduate Certificate***Characteristics of competencies or learning outcomes*

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth and complexity involving the initiation, analysis, design, planning, execution and evaluation of technical and management functions in highly varied and highly specialised contexts.

- Applications involve making significant, high-level, independent judgements in major broad or planning, design, operational, technical and management functions in highly varied and specialised contexts. They may include responsibility and broad-ranging accountability for the structure, management and output of the work or functions of others.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

#### *Distinguishing features of learning outcomes*

- Demonstrate the self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Initiate, analyse, design, plan, execute and evaluate major broad or technical and management functions in highly varied and highly specialised contexts.
- Generate and evaluate ideas through the analysis of information and concepts at an abstract level.
- Demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills in complex contexts.
- Demonstrate responsibility and broad-ranging accountability for the structure, management and output of the work or functions of others.

### **Vocational Graduate Diploma**

#### *Characteristics of competencies or learning outcomes*

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth, depth and complexity involving the initiation, analysis, design, planning, execution and evaluation of major functions, both broad and highly specialised, in highly varied and highly specialised contexts.
- Further specialisation within a systematic and coherent body of knowledge.
- Applications involve making high-level, fully independent, complex judgements in broad planning, design, operational, technical and management functions in highly varied and highly specialised contexts. They may include full responsibility and accountability for all aspects of work and functions of others, including planning, budgeting and strategy development.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

#### *Distinguishing features of learning outcomes*

- Demonstrate the self-directed development and achievement of broad and highly specialised areas of knowledge and skills, building on prior knowledge and skills.
- Initiate, analyse, design, plan, execute and evaluate major functions, both broad and within highly varied and highly specialised contexts.
- Generate and evaluate complex ideas through the analysis of information and concepts at an abstract level.
- Demonstrate an expert command of wide-ranging, highly specialised, technical, creative or conceptual skills in complex and highly specialised or varied contexts.
- Demonstrate full responsibility and accountability for personal outputs.
- Demonstrate full responsibility and accountability for all aspects of the work or functions of others, including planning, budgeting and strategy.

### **Vocational Graduate Diploma**

#### *Characteristics of competencies or learning outcomes*

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth, depth and complexity involving the initiation, analysis, design, planning, execution and evaluation of major functions, both broad and highly specialised, in highly varied and highly specialised contexts.
- Further specialisation within a systematic and coherent body of knowledge.
- Applications involve making high-level, fully independent, complex judgements in broad planning, design, operational, technical and management functions in highly varied and highly specialised contexts. They may include full responsibility and accountability for all aspects of work and functions of others, including planning, budgeting and strategy development.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

#### *Distinguishing features of learning outcomes*

- Demonstrate the self-directed development and achievement of broad and highly specialised areas of knowledge and skills, building on prior knowledge and skills.
- Initiate, analyse, design, plan, execute and evaluate major functions, both broad and within highly varied and highly specialised contexts.
- Generate and evaluate complex ideas through the analysis of information and concepts at an abstract level.
- Demonstrate an expert command of wide-ranging, highly specialised, technical, creative or conceptual skills in complex and highly specialised or varied contexts.
- Demonstrate full responsibility and accountability for personal outputs.
- Demonstrate full responsibility and accountability for all aspects of the work or functions of others, including planning, budgeting and strategy.
- 

## **Qualifications and Packaging Rules**

### **AUR12 Qualifications**

Qualification requirements from Certificate I to Diploma have been altered, in some cases significantly, however, more importantly, they allow for flexibility while the creation of descriptors within qualifications provide specialisation as appropriate.

While some variation occurs in numbers of units of competency across qualifications, occupational descriptors align with the descriptions provided by the AQF at various levels.

### **VET in Schools**

The delivery and assessment of competence under this package is seen as appropriately designed for VET in Schools and these programs are to be encouraged.

However, due to the requirement to demonstrate competence, it may be difficult for a school to assess and award qualifications within AUR12, except in close partnerships with other RTOs or organisations within the industry. The Certificate I and Certificate II in Automotive Vocational Preparation has been designed to better suit VET in Schools and pre-apprenticeship delivery.

### **Transition Arrangements**

Qualifications achieved from AUR05 will be recognised.

People who have attained units of competency from AUR05, should be granted equivalent units of competency in AUR12, hence, credit towards a full AUR12 qualification may be achievable dependant on competencies attained under the relevant AUR05 qualification. A comprehensive mapping from AUR05 to AUR12 is included in the Training Package.

### **AUR12 Assessment Criteria**

AUR12 has adopted the mandatory Assessment Guidelines, which provide the endorsed framework for assessment of units of competency in this Training Package. They are designed to ensure that assessment is consistent with the AQTF 2010. Assessments against units of competency in this Training Package must be carried out in accordance with these Assessment Guidelines.

Additional assessment advice is provided below with regard to simulated workplace environments. Some emphasis has been given to the establishment of partnerships in delivery and assessment to ensure satisfactory demonstration of workplace competence. This section provides an overview of the requirements for assessment when using the AUR12 Training Package, including a summary of the AQTF 2010 requirements, licensing/registration requirements, and assessment pathways.

### **Assessment in the Automotive Industry**

The automotive industry considers skills and knowledge demonstrated in a real workplace environment to be of great importance. While assessment of the units of competency in the AUR12 Training Package can be carried out in a simulated work environment, the industry strongly recommends that assessment of skills acquired is conducted under partnership arrangement in the workplace.

Assessment of competence requires the collection of evidence which should be conducted over a period of time. This assessment approach may include demonstration at the workplace and/or a simulated work environment to ensure that demonstration of competence is valid and reliable. The individual being assessed needs to be aware that the collection of evidence is ongoing and part of planning, conducting and reviewing the assessment process.

### **Simulated Work Environment**

The AUR12 Training Package defines Simulated Work Environment as a model of convenience that is established to resemble the real thing which is for training purposes only. Should it be necessary to conduct competency-based training and/or assessment in a simulated work environment and/or worksite, both the environment and/or worksite must resemble the real circumstances according to the task required to be assessed. These tasks should not be interpreted as being projects that are related to the off-the-job training outcomes rather than skills acquired within any given competency standard.

Units of competency from the AUR12 Training Package should wherever possible be assessed in a work environment. Where this is not possible assessment may occur in a simulated work environment.

A simulated work environment may be required for the following reasons:

the candidate may not have access to a workplace (e.g. Certificate I qualification, which is targeted at VET in Schools)

the workplace may not use the relevant skill, equipment or process conducting assessments may be disruptive or interfere with work requirements, for example, there may be ethical, privacy or confidentiality issues to consider

it may not be appropriate to apply the skills in the workplace due to potential risks, such as work health and safety (WHS) or equipment being damaged.

In order to be valid and reliable, the simulated work environment must closely resemble what occurs in a real work environment. The simulated work environment should involve a range of activities that reflect real work experience.

It is critical that when a simulated work environment is being set up that the assessor is thoroughly familiar with the units of competence as well as experienced in the current circumstances of the work.

In deciding whether a simulation or an assessment environment has been adequately set up, the following questions should be considered. Are there opportunities to:

- test the full range of equipment?
- use up to date equipment and software?
- reflect times and deadlines?
- show the complexity of dealing with multiple tasks?
- involve prioritizing among competing tasks?
- deal with customers, including difficult ones?
- work with others in a team?
- communicate with diverse groups?
- find, discuss and test solutions to problems?
- explore health and safety issues?
- answer practically oriented, applied knowledge questions?
- show the level of written and verbal expression sufficient for the work requirements?

### **Supporting Integrated Training Delivery and Assessment**

As a general principle, the automotive industry supports the integration of units of competency for assessment, where practical, as this reflects real work practices.

An integrated approach to assessment brings together a number of units of competency, which reflect actual workplace requirements. For example, an employee working in an automotive environment would complete a number of interrelated repair/sales and WHS tasks together, not simply one individual task at a time. An integrated assessment activity would be designed to collect evidence for a number of units together rather than designing one assessment activity for each individual element or performance criteria.

Where both training and assessment are required, the industry supports an approach which provides for off-the-job training combined with assessment of the application of skills and knowledge in a real work situation.

The AUR12 Training Package defines on-the-job assessment as that which occurs within the normal operation of the business. The industry considers it important that candidates should have the opportunity to develop competence through structured learning programs which include assessing in the workplace.

It would be expected that where an integrated assessment approach is implemented that several integrated assessments would be necessary to cover the breadth and complexity of the qualification, at Certificate II and above.

The context of the assessment, the role of the candidate and the complexity of the task will influence how many units of competence may be integrated.

### **Benchmarks for Assessment**

Assessment within the National Skills Framework is the process of collecting evidence and making judgements about whether competency has been achieved to confirm whether an individual can perform to the standards expected in the workplace, as expressed in the relevant endorsed unit of competency.

In the areas of work covered by the AUR12 Training Package, the endorsed units of competency are the benchmarks for assessment. As such, they provide the basis for nationally recognised Australian Qualifications Framework (AQF) qualifications and Statements of Attainment issued by RTOs.

### **Employability Skills**

The definition of employability skills is "skills required not only to gain employment, but also to progress within an enterprise so as to achieve one's potential and contribute successfully to enterprise strategic directions". Employability skills are also sometimes referred to as generic skills, capabilities or key competencies.

The Employability Skills Framework identifies eight Employability Skills:

- communication
- teamwork
- problem solving
- initiative and enterprise
- planning and organising
- self-management
- learning
- technology.

These Employability Skills can be further described for particular occupational and industry contexts by sets of facets. Together these form the Employability Skills Framework below.

### **Employability Skills Framework**

<b>Skill</b>	<b>Facets</b>  Aspects of the skill that employers identify as important. The nature and application of these facets will vary depending on industry and job type.
<b>Communication</b> that contributes to productive and harmonious relations across employees and customers	<ul style="list-style-type: none"> <li>• listening and understanding</li> <li>• speaking clearly and directly</li> <li>• writing to the needs of the audience</li> <li>• negotiating responsively</li> <li>• reading independently</li> <li>• empathising</li> <li>• using numeracy effectively</li> <li>• understanding the needs of internal and external customers</li> <li>• persuading effectively</li> <li>• establishing and using networks</li> <li>• being assertive</li> <li>• sharing information</li> </ul>

<b>Skill</b>	<b>Facets</b> Aspects of the skill that employers identify as important. The nature and application of these facets will vary depending on industry and job type.
	<ul style="list-style-type: none"> <li>speaking and writing in languages other than English</li> </ul>
<b>Teamwork</b> that contributes to productive working relationships and outcomes	<ul style="list-style-type: none"> <li>working across different ages irrespective of gender, race, religion or political persuasion</li> <li>working as an individual and as a member of a team</li> <li>knowing how to define a role as part of the team</li> <li>applying teamwork to a range of situations e.g. futures planning and crisis problem solving</li> <li>identifying the strengths of team members</li> <li>coaching and mentoring skills, including giving feedback</li> </ul>
<b>Problem solving</b> that contributes to productive outcomes	<ul style="list-style-type: none"> <li>developing creative, innovative and practical solutions</li> <li>showing independence and initiative in identifying and solving problems</li> <li>solving problems in teams</li> <li>applying a range of strategies to problem solving</li> <li>using mathematics, including budgeting and financial management to solve problems</li> <li>applying problem-solving strategies across a range of areas</li> <li>testing assumptions, taking into account the context of data and circumstances</li> <li>resolving customer concerns in relation to complex project issues</li> </ul>
<b>Initiative and enterprise</b> that contribute to innovative outcomes	<ul style="list-style-type: none"> <li>adapting to new situations</li> <li>developing a strategic, creative and long-term vision</li> <li>being creative</li> <li>identifying opportunities not obvious to others</li> <li>translating ideas into action</li> <li>generating a range of options</li> <li>initiating innovative solutions</li> </ul>
<b>Planning and organising</b> that contribute to long and short-term strategic planning	<ul style="list-style-type: none"> <li>managing time and priorities - setting time lines, coordinating tasks for self and with others</li> <li>being resourceful</li> <li>taking initiative and making decisions</li> <li>adapting resource allocations to cope with contingencies</li> <li>establishing clear project goals and deliverables</li> <li>allocating people and other resources to tasks</li> <li>planning the use of resources, including time management</li> <li>participating in continuous improvement and planning processes</li> <li>developing a vision and a proactive plan to accompany it</li> </ul>

<b>Skill</b>	<b>Facets</b>  Aspects of the skill that employers identify as important. The nature and application of these facets will vary depending on industry and job type.
	<ul style="list-style-type: none"> <li>• predicting - weighing up risk, evaluating alternatives and applying evaluation criteria</li> <li>• collecting, analysing and organising information</li> <li>• understanding basic business systems and their relationships</li> </ul>
<b>Self-management</b> that contributes to employee satisfaction and growth	<ul style="list-style-type: none"> <li>• having a personal vision and goals</li> <li>• evaluating and monitoring own performance</li> <li>• having knowledge and confidence in own ideas and visions</li> <li>• articulating own ideas and visions</li> <li>• taking responsibility</li> </ul>
<b>Learning</b> that contributes to ongoing improvement and expansion in employee and company operations and outcomes	<ul style="list-style-type: none"> <li>• managing own learning</li> <li>• contributing to the learning community at the workplace</li> <li>• using a range of mediums to learn - mentoring, peer support and networking, IT and courses</li> <li>• applying learning to technical issues (e.g. learning about products) and people issues (e.g. interpersonal and cultural aspects of work)</li> <li>• having enthusiasm for ongoing learning</li> <li>• being willing to learn in any setting - on and off the job</li> <li>• being open to new ideas and techniques</li> <li>• being prepared to invest time and effort in learning new skills</li> <li>• acknowledging the need to learn in order to accommodate change</li> </ul>
<b>Technology</b> that contributes to the effective carrying out of tasks	<ul style="list-style-type: none"> <li>• having a range of basic IT skills</li> <li>• applying IT as a management tool</li> <li>• using IT to organise data</li> <li>• being willing to learn new IT skills</li> <li>• having the WHS knowledge to apply technology</li> <li>• having the appropriate physical capacity</li> </ul>

### Employability Skills Summary

An Employability Skills Summary exists for each qualification. Summaries provide a lens through which to view Employability Skills at the qualification level and capture the key aspects or facets of the Employability Skills that are important to the job roles covered by the qualification. Summaries are designed to assist trainers and assessors to identify and include important industry application of Employability Skills in learning and assessment strategies. The following is important information for trainers and assessors about Employability Skills Summaries.

- Employability Skills Summaries provide examples of how each skill is applicable to the job roles covered by the qualification.

- Employability Skills Summaries contain general information about industry context which is further explained as measurable outcomes of performance in the units of competency in each qualification.
- The detail in each Employability Skills Summary will vary depending on the range of job roles covered by the qualification in question.
- Employability Skills Summaries are not exhaustive lists of qualification requirements or checklists of performance (which are separate assessment tools that should be designed by trainers and assessors after analysis at the unit level).
- Employability Skills Summaries contain information that may also assist in building learners' understanding of industry and workplace expectations.

### **Industry requirements for Employability Skills**

Employability Skills Summaries have been developed for each AUR12 qualification.

### **Environmental Issues**

Underpinning the assessment process is the notion that workplace performance should lead to viable and sustainable enterprises or organisations. This covers profitability, sustainability and observance of good industry practices. These themes have been incorporated into the units of competency and are therefore an essential component of the assessment process.

Many work practices in the automotive industry can have either positive or negative environmental impacts that the assessor should be aware of and incorporate into judgments, when assessing evidence.

For example, negative work practices can include:

- inappropriate WHS clothing and equipment
- inappropriate recycling of materials
- failing to carry out the safe disposal of chemicals, oils, greases, solvents and packaging materials.
- Positive work practices can include:
- installing and using effluent disposal systems
- use of masks, overalls and gloves to protect employees
- installation of exhaust and other systems to reduce air pollutant.

Those being assessed at the higher qualification levels are responsible for the development of processes, strategies, procedures and controls. Those at lower levels have responsibility to act on, observe and report on processes, strategies, procedures and controls.

Questioning strategies can be used during assessment to ascertain whether a candidate is working towards enterprise viability and sustainability and is minimising environmental impacts.

Open-ended questions like those below can assist in making this judgment.

- What are the main environmental issues surrounding your workplace?
- How and why do these environmental issues occur?
- What current work practices can have a negative impact on the environment?
- How do you minimise environmental impacts in your workplace?
- What current work practices have been adopted to limit negative impacts on the environment?
- How are staff informed about what constitutes good environmental practice?

Finally, evidence presented for assessment should indicate the application of good environmental practice in operational tasks and in planning and management. Where this is not obvious, assessors should require further evidence to be submitted that illustrates adherence to environmental principles and practices.

### **Language, Literacy and Numeracy**

Automotive RS&R units of competency have been developed to accommodate varying language, literacy and numeracy capabilities. The required levels of language, literacy and numeracy will be outlined in these standards. Fairness in assessment means that where high levels of language, literacy and numeracy are not integral to successful completion of a work function (i.e. unit of competency); the assessment should provide alternatives for determining a person's competence. For a person with low levels of language, literacy and numeracy, this could include:

- oral questioning rather than written tests or project work
- arranging for a supervisor or colleague to assist in the evidence gathering and even the evidence interview
- the use of signs and gestures rather than words where there exists a language barrier
- less reliance on written work in favour of practical demonstration and references.

In some situations it may be possible to conduct the oral part of an assessment or to assess aspects of knowledge by using a language other than English.

Where there is a requirement for basic language, literacy and numeracy such as in units of competence dealing with chemical use and application, then only the essential requirement for language, literacy and numeracy should be evaluated. For example, a person may be able to read relevant information in an operator's manual that will enable them to operate a particular machine in a safe manner and as required by the unit of competence. However, it would be unfair to expect them to read and understand other written material within the manual that is not relevant to the standard.

Variations in language, literacy and numeracy can result from a range of circumstances such as culture and ethnicity; educational background; and physical, learning or intellectual disabilities.

The assessor's role is not to evaluate the language, literacy and numeracy skills of the individual, but to judge whether they are able to perform the required work function to a workplace standard as defined by the units of competence. Making this judgment will often rely on the development of creative approaches to designing assessment techniques and tools that respect the diversity of language, literacy and numeracy skills in the workplace and training institutions.

### **Work Health and Safety**

In the automotive industry, WHS is an integral part of every work function. This has been reflected in the units of competency for the AUR12 Training Package. When assessing an individual, consideration must be made of the WHS aspects of evidence tendered for assessment.

For example, at the lower qualification levels, the identification of hazards and the use of personal protective equipment are essential requirements. Therefore, evidence for assessment should indicate that an individual not only performs the task as required, but also uses appropriate safety equipment and clothing and is capable of identifying hazards. While the wearing of appropriate personal protective equipment can be assessed by observation and demonstration, the identification of hazards may require use of written or oral questioning strategies.

Open-ended questions like those below can assist in this process:

- What things could possibly cause harm to workers in your workplace?
- What do you do when you see something that looks dangerous and may harm someone?
- How do you make sure you protect yourself from hazards in the workplace?
- What protective equipment do you use and when?

At the higher qualification levels there is a strong focus on not only identifying hazards, but also on assessing and controlling risks (adverse outcomes associated with hazards). These risks range from death, injury and illness, to financial loss and prosecution. Risk management covers facilities and equipment, planning, training, labour organisation and work procedures. Evidence for assessment at the higher levels should include documentation of WHS risk assessment and management. This should be found in a range of areas, including reports, business plans, WHS audits, training programs for staff, forms detailing compliance with legislation, and enterprise policies and procedures.

Questioning strategies at the higher qualifications levels should also focus on risk assessment and management. Questions such as:

- How do you assess risks associated with workplace operations?
- What actions have you undertaken in relation to hazards identified in the workplace?
- How do you ensure that staff members employed in the workplace observe WHS guidelines?
- Can you show me the WHS policies and procedures for your enterprise?

Where an individual cannot provide evidence, an assessor may need to provide additional time for that evidence to be prepared or obtained.

The automotive industry defined how to package units of competence into the qualifications in this Training Package.

### **Qualification Pathways**

The following pathways charts are provided to show the types of pathways into and from qualifications that are possible with this Training Package. For more information about qualifications and pathways contact [ASA email info@autoskillsaustralia.com.au](mailto:info@autoskillsaustralia.com.au)

Figure 1: Pathway Chart – Body Repair Sector

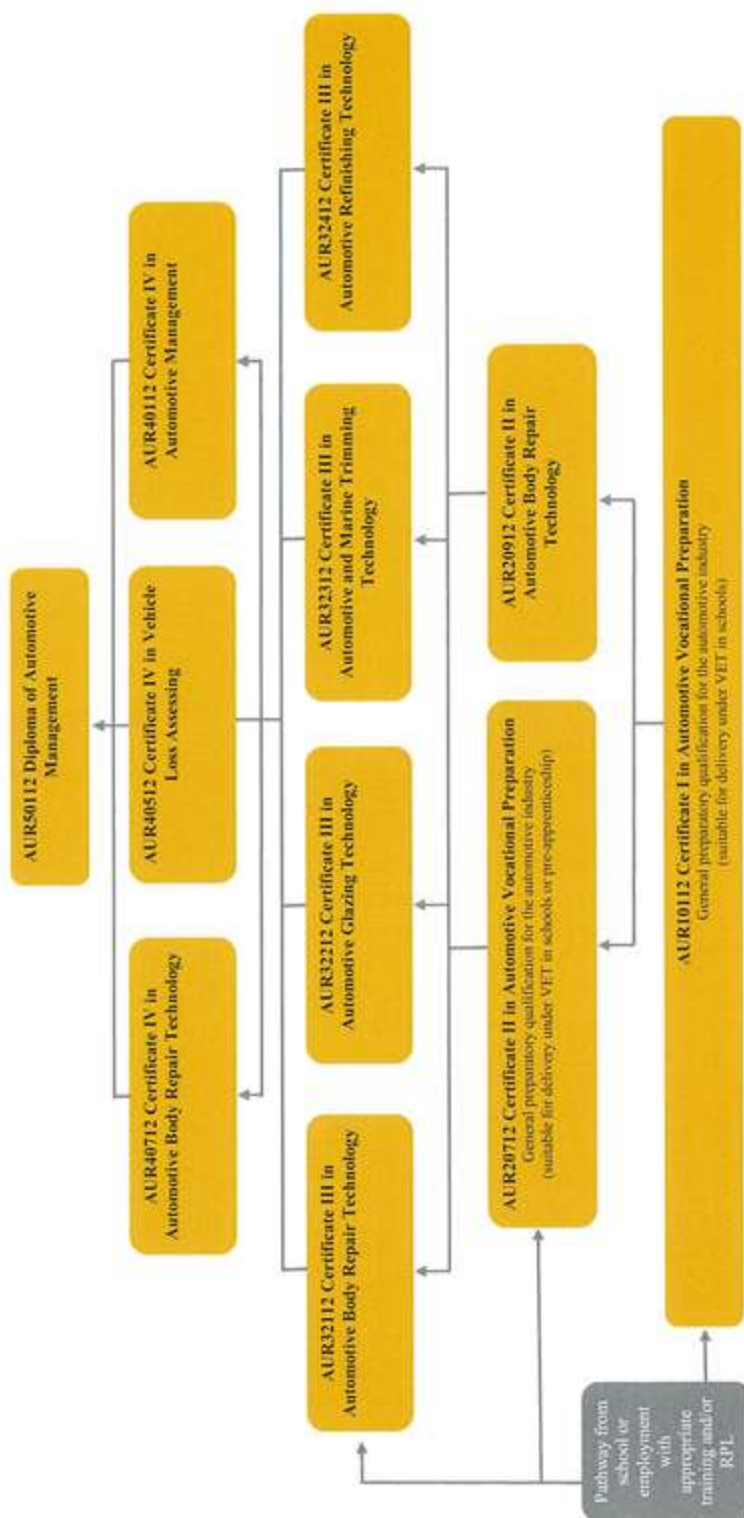


Figure 2: Pathway Chart – Automotive Electrical Sector

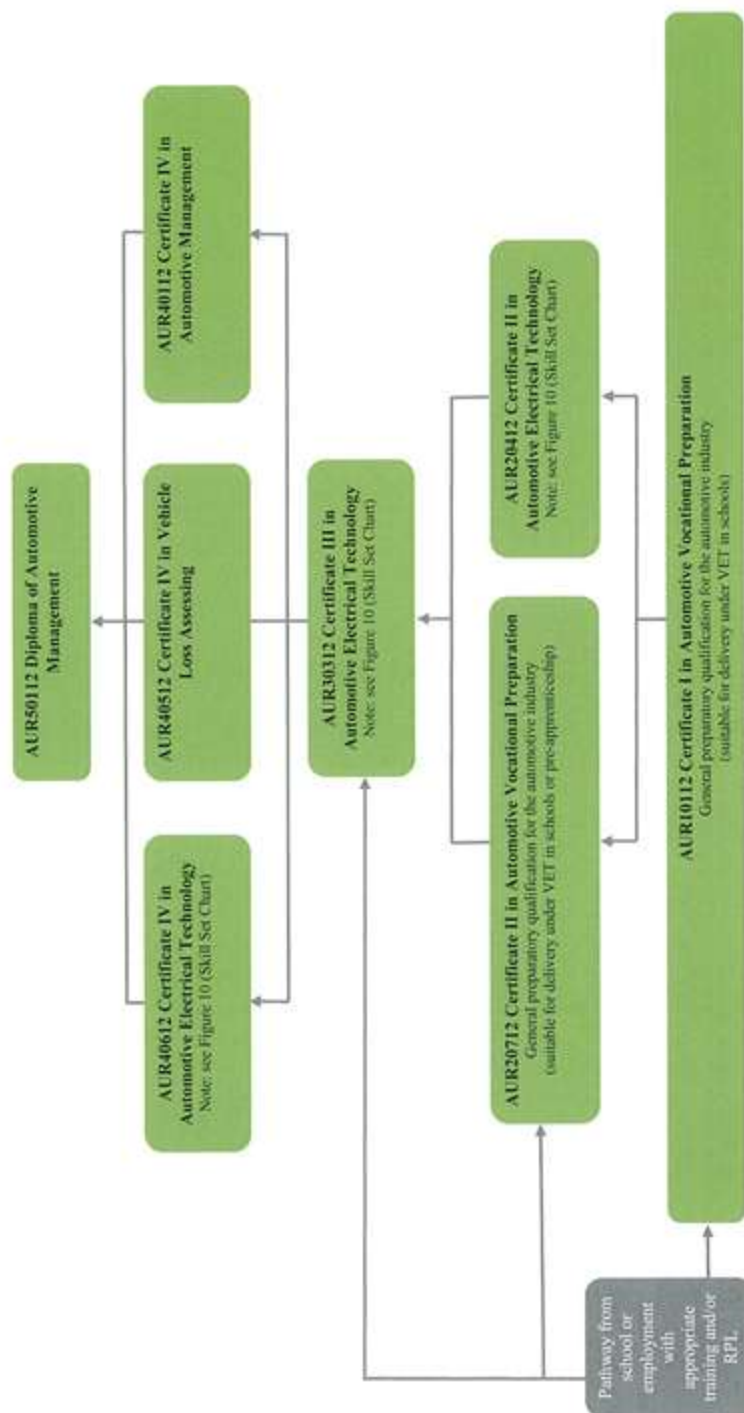


Figure 3: Pathway Chart – Bicycle Sector

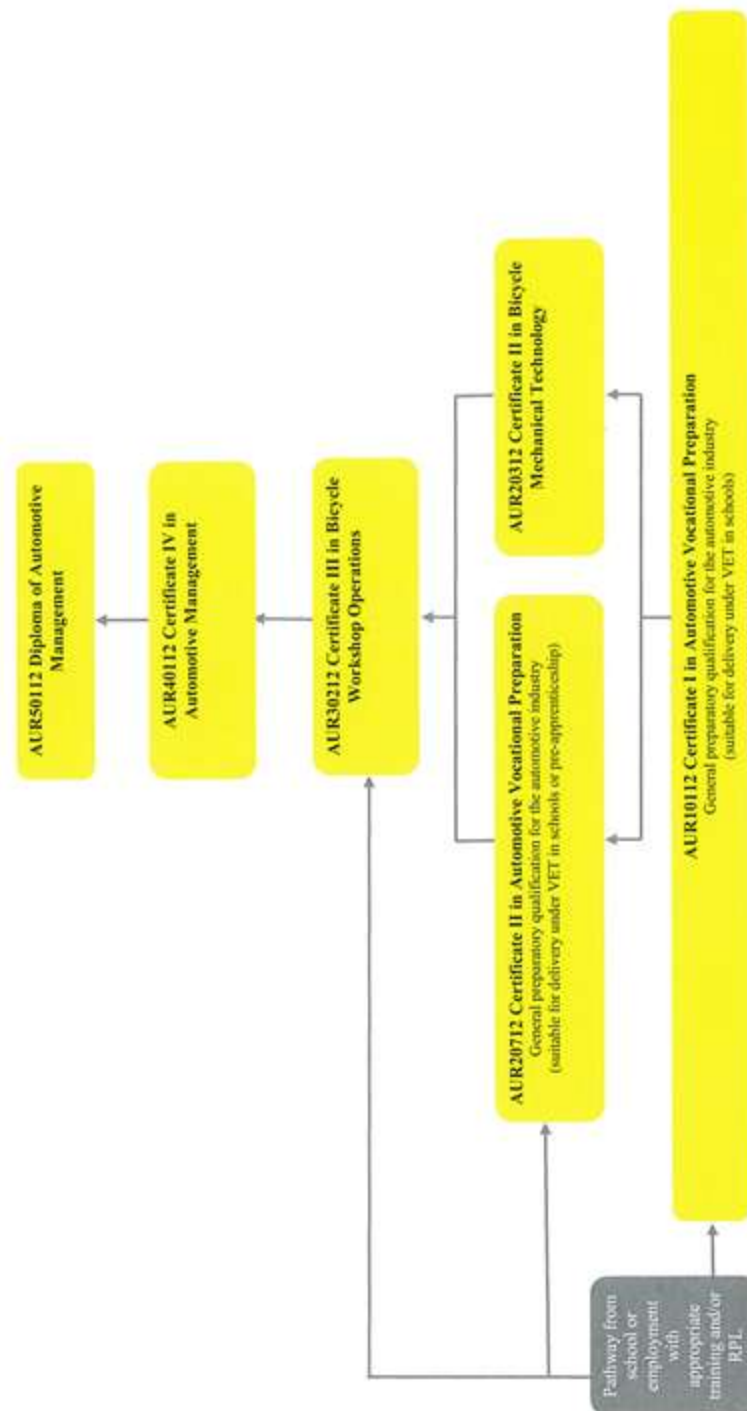


Figure 4: Pathway Chart – Marine Sector

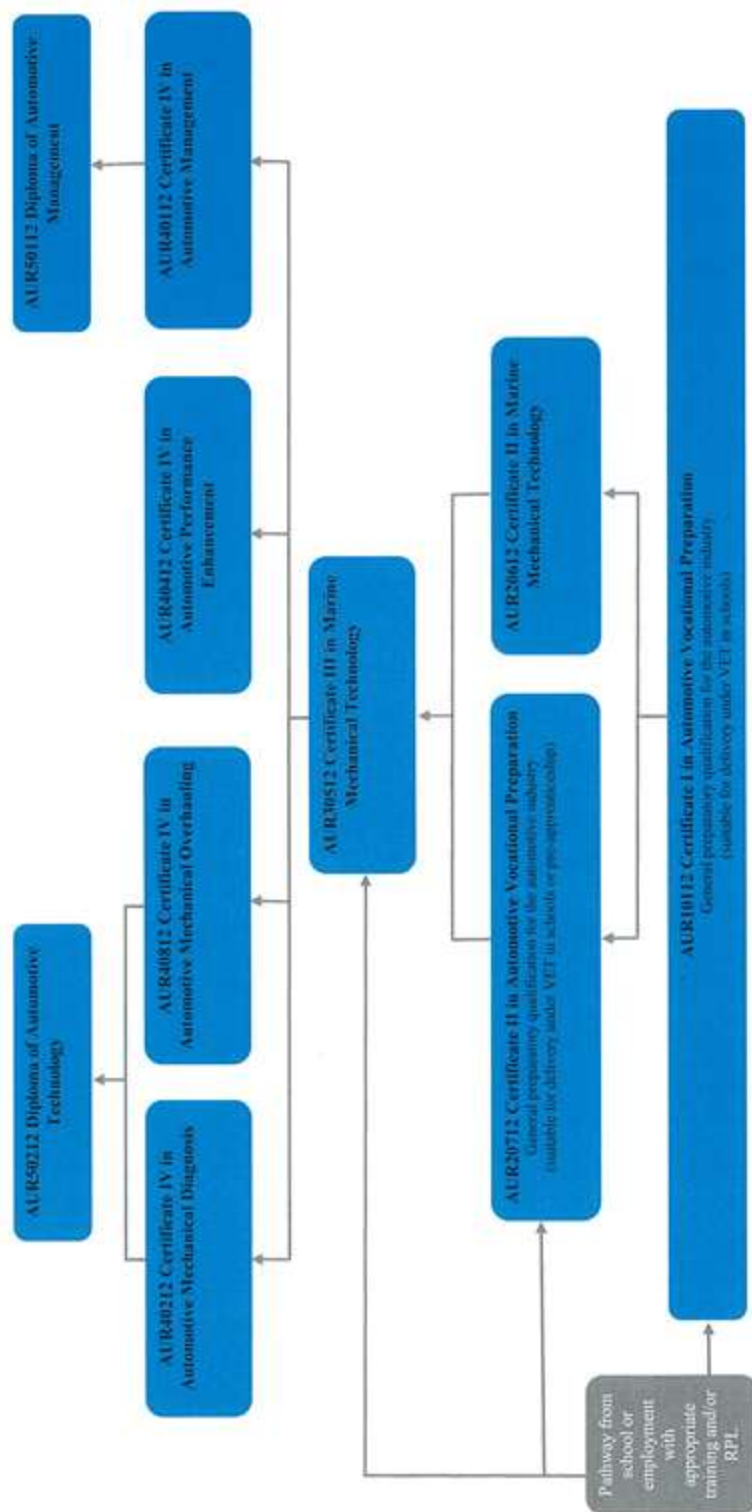


Figure 5: Pathway Chart – Outdoor Power Equipment Sector

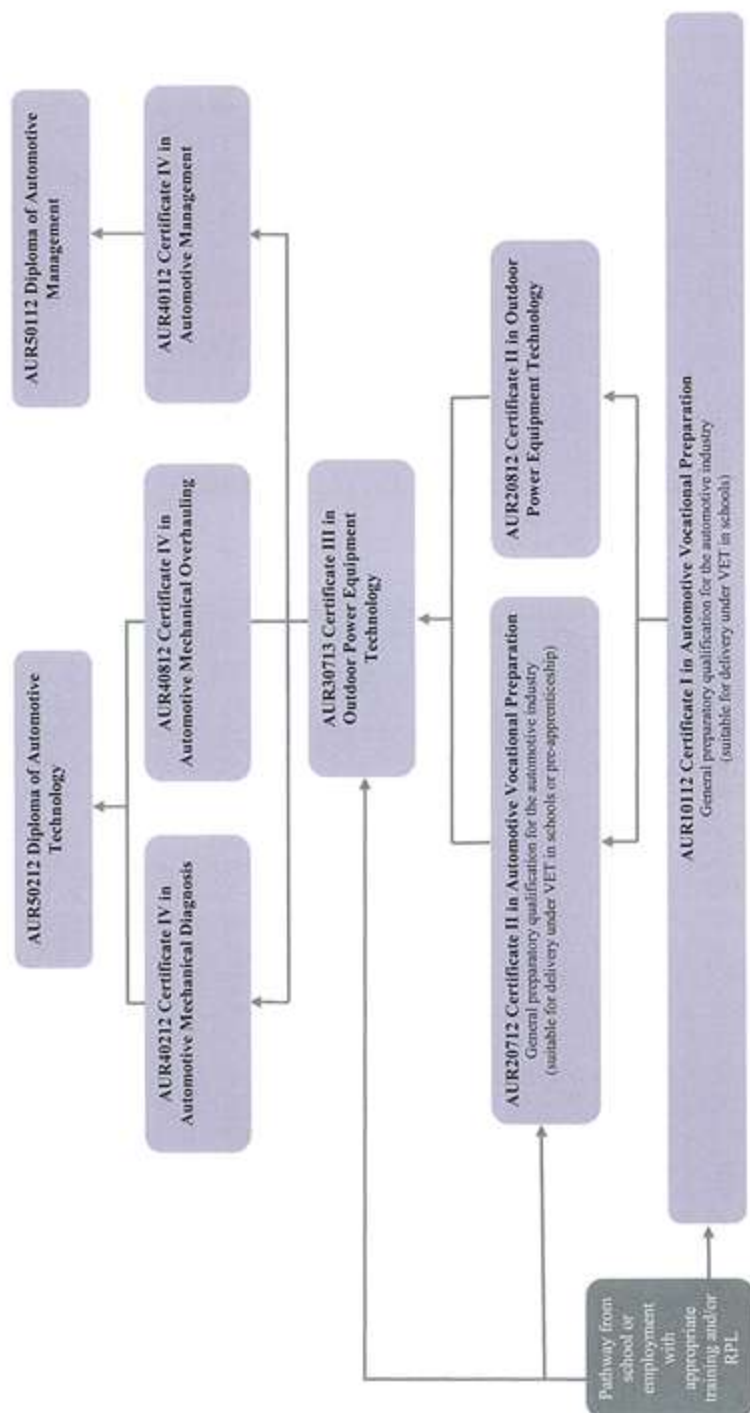


Figure 6: Pathway Chart – Motorsport Sector

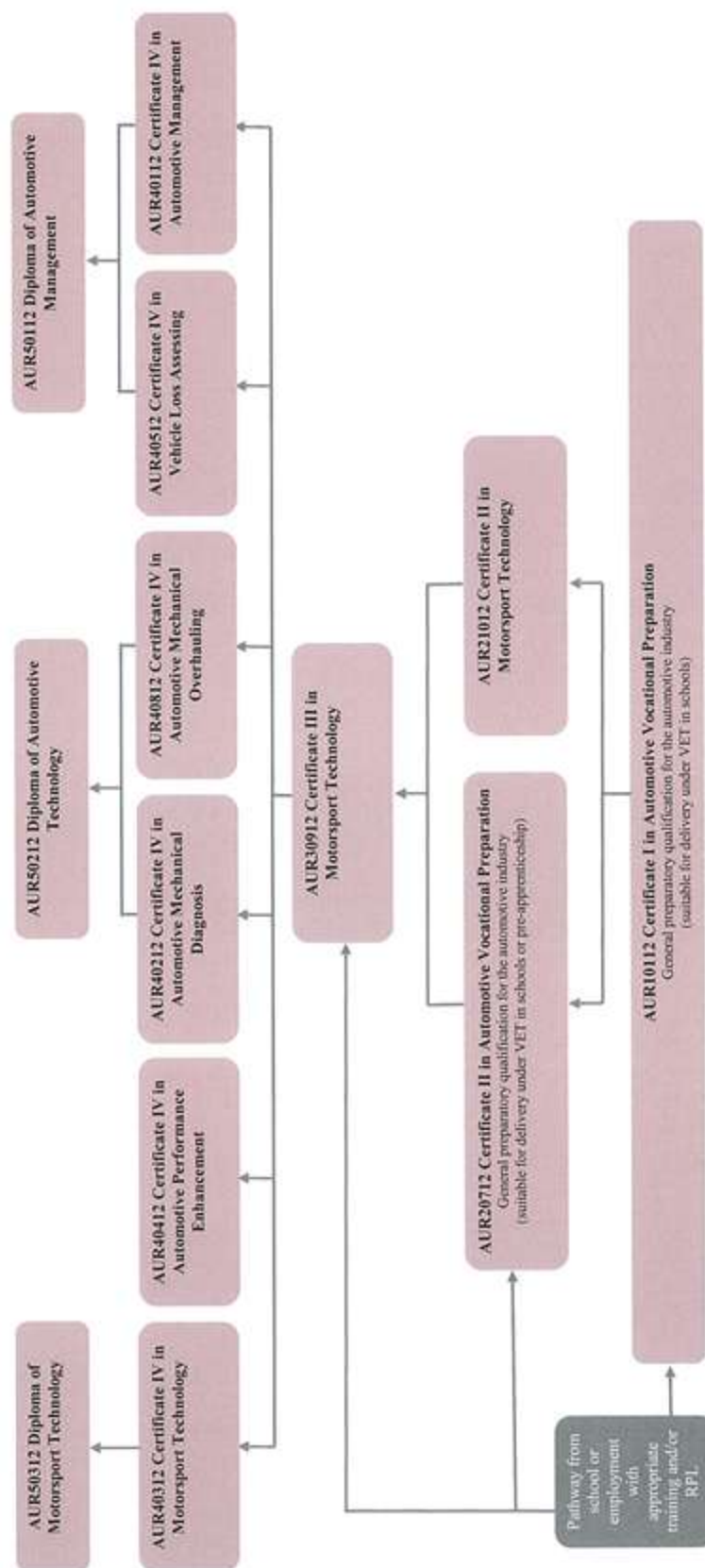


Figure 7: Pathway Chart – Automotive Administration and Sales Sector

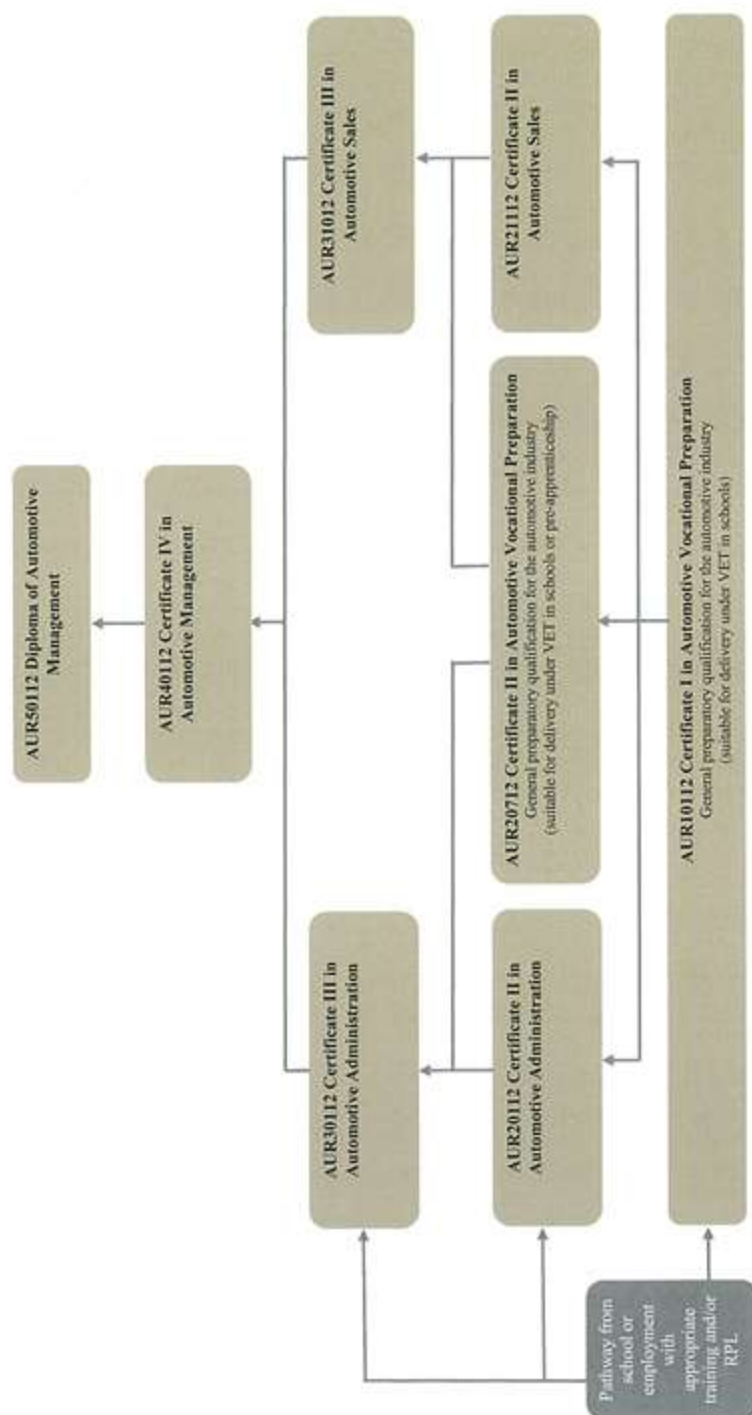


Figure 8: Pathway Chart – Mechanical Heavy Vehicle Sector

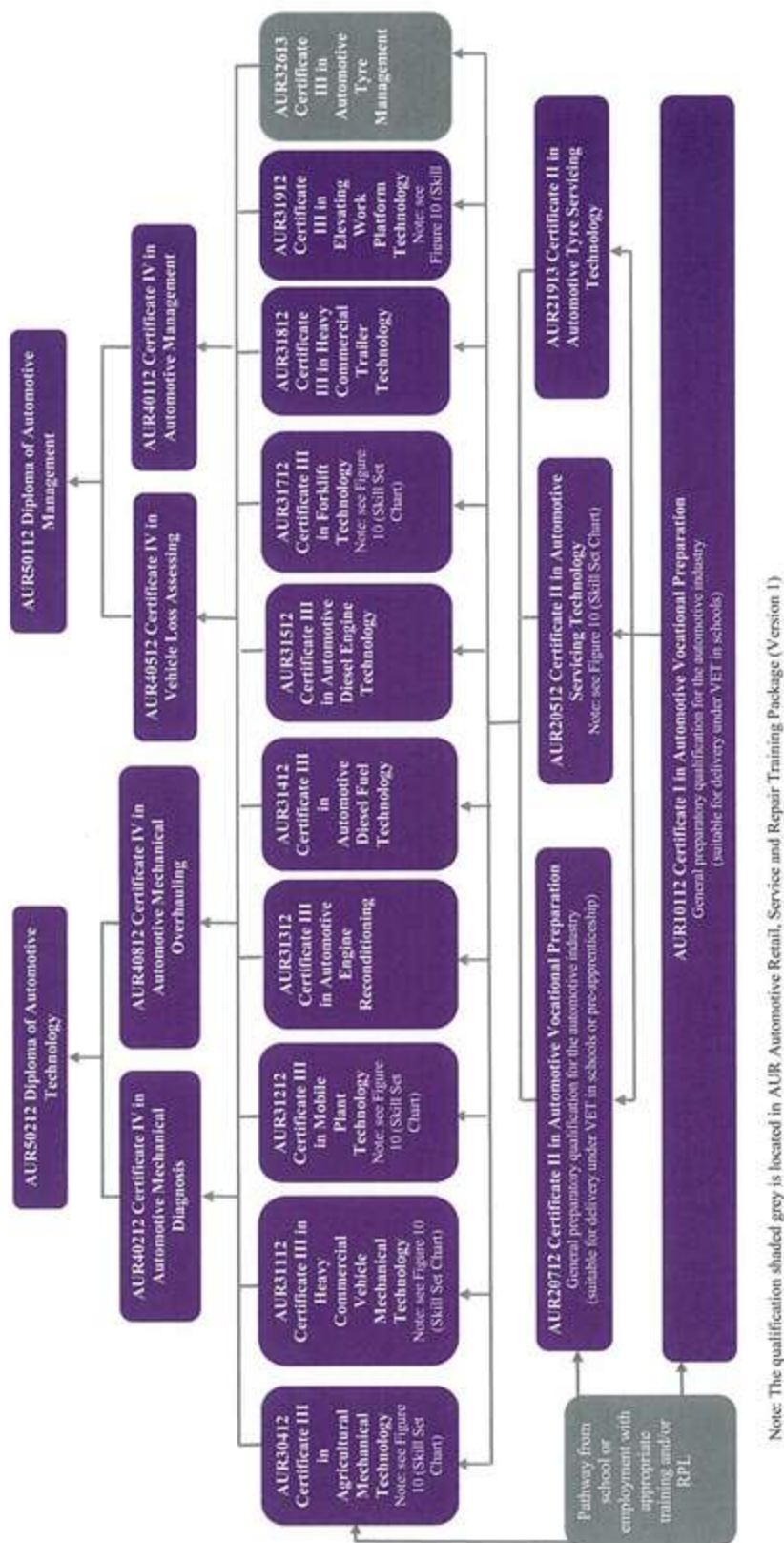
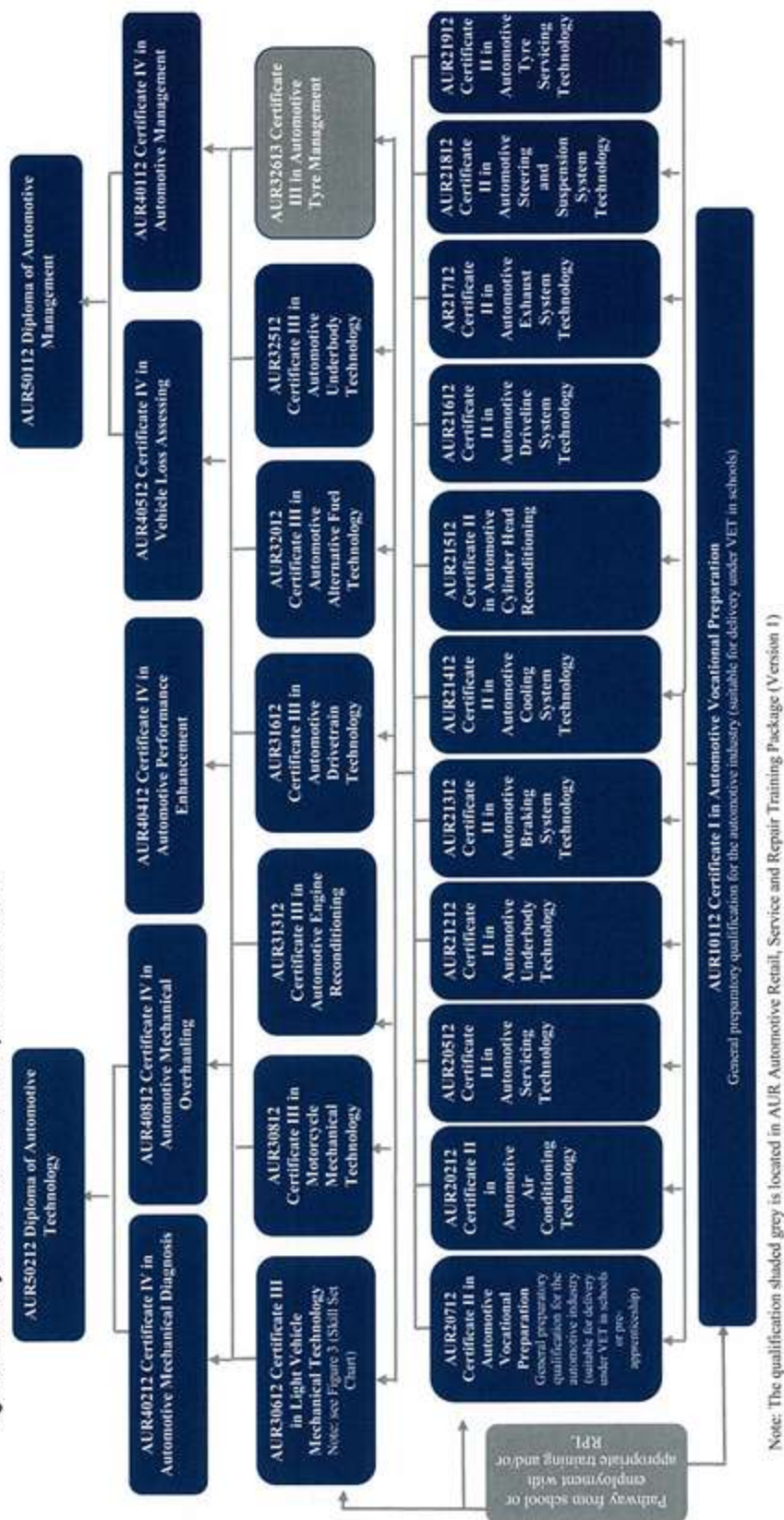


Figure 9: Pathway Chart – Mechanical and Specialisation Sector



## Skill Sets

### Definition

Skill sets are defined as single units of competency, or combinations of units of competency from an endorsed Training Package, which link to a licence or regulatory requirement, or defined industry need.

### Wording on Statements of Attainment

Skill sets are a way of publicly identifying logical groupings of units of competency which meet an identified need or industry outcome. Skill sets are not qualifications.

Where skill sets are identified in a Training Package, the Statement of Attainment can set out the competencies a person has achieved in a way that is consistent and clear for employers and others. This is done by including the wording 'these competencies meet *[insert skill set title or identified industry area]* need' on the Statement of Attainment. This wording applies only to skill sets that are formally identified as such in the endorsed Training Package. See the 2010 edition of the AQF Implementation Handbook for advice on wording on Statements of Attainment. [http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF\\_Handbook\\_07.pdf](http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF_Handbook_07.pdf)

### Skill Sets in this Training Package

This section provides information on Skill Sets within this Training Package, with the following important disclaimer: Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Where this section is blank, nationally recognised Skill Sets have yet to be identified in this industry.

The Skill Sets within this Training Package are as follows:

- AURSS0004 Automotive CNG Installation Service and Repair Skill Set
- AURSS0005 Automotive CNG Service and Repair Skill Set
- AURSS0006 Automotive Electrical Skill Set for Light Vehicle Technicians
- AURSS0007 Automotive LNG Installation, Service and Repair Skill Set
- AURSS0008 Automotive LNG Service and Repair Skill Set
- AURSS0009 Automotive LPG Installation, Service and Repair Skill Set
- AURSS0010 Automotive LPG Service and Repair Skill Set
- AURSS0011 Battery Electric Vehicle Diagnosis and Repair Skill Set
- AURSS0012 Battery Electric Vehicle Inspection and Servicing Skill Set
- AURSS0013 Heavy Commercial Vehicle Skill Set for Light Vehicle Technicians
- AURSS0014 Hybrid Electric Vehicle Inspection and Servicing Skill Set
- AURSS0015 Mobile Plant Skill Set for Agricultural Equipment Technicians
- AURSS0016 Mobile Plant Skill Set for Heavy Commercial Vehicle Technicians
- AURSS0017 Mobile Plant Skill Set for Light Vehicle Technicians
- AURSS0018 Vehicle Air Conditioning Install and Overhaul Skill Set
- AURSS0019 Vehicle Air Conditioning Installation Skill Set
- AURSS0020 Vehicle Air Conditioning Overhaul Skill Set
- AURSS0021 Vehicle Air Conditioning Service, Retrofit and Repair Skill Set
- AURSS0022 Vehicle Refrigerant Recovery Skill Set
- AURSS0023 Advanced Body Repair Recovery Skill Set
- AURSS0024 Advanced Body Repair Welding Skill Set
- AURSS0025 Advanced Vehicle Refinishing Skill Set

Pathways Information, Licensing/Regulatory Information, Target Group and Suggested Words for Statement of Attainment are included in each Skill Set within this Training Package.

Figure 10: Skill Set Chart

Skill Sets	Qualifications														
	AUR20212 Certificate II in Automotive Air Conditioning Technology	AUR20412 Certificate II in Automotive Electrical Technology	AUR20512 Certificate II in Automotive Servicing Technology	AUR21412 Certificate II in Automotive Cooling System Technology	AUR30312 Certificate III in Automotive Electrical Technology	AUR30412 Certificate III in Agricultural Mechanical Technology	AUR30612 Certificate III in Light Vehicle Mechanical Technology	AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology	AUR31212 Certificate III in Mobile Plant Technology	AUR31712 Certificate III in Forklift Technology	AUR31912 Certificate III in Elevating Work Platform Technology	AUR32112 Certificate III in Automotive Body Repair Technology	AUR32412 Certificate III in Automotive Refinishing Technology	AUR40612 Certificate IV in Automotive Electrical Technology	AUR40212 Certificate IV in Automotive Mechanical Diagnosis
Battery Electric Vehicle Inspection and Service Skill Set					X		X							X	
Battery Electric Vehicle Diagnosis and Repair Skill Set					X		X							X	
Hybrid Electric Vehicle Inspection and Service Skill Set					X		X							X	
Advanced Body Repair Skill Set												X			
Advanced Body Repair Welding Skill Set												X			
Advanced Vehicle Refinishing Skill Set													X		
Automotive CNG Installation, Service and Repair Skill Set					X	X	X	X	X	X	X				
Automotive CNG Service and Repair Skill Set					X	X	X	X	X	X	X				
Automotive LNG Installation, Service and Repair Skill Set					X	X	X	X	X	X	X				
Automotive LNG Service and Repair Skill Set					X	X	X	X	X	X	X				
Automotive LPG Installation, Service and Repair Skill Set					X	X	X	X	X	X	X				
Automotive LPG Service and Repair Skill Set					X	X	X	X	X	X	X				
Heavy Commercial Vehicle Skill Set for Light Vehicle Technicians							X								

Skill Sets	Qualifications														
	AU/R20212 Certificate II in Automotive Air Conditioning Technology	AU/R20412 Certificate II in Automotive Electrical Technology	AU/R20512 Certificate II in Automotive Servicing Technology	AU/R21412 Certificate II in Automotive Coolant System Technology	AU/R30312 Certificate III in Automotive Electrical Technology	AU/R30412 Certificate III in Agricultural Mechanical Technology	AU/R30612 Certificate III in Light Vehicle Mechanical Technology	AU/R31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology	AU/R31212 Certificate III in Mobile Plant Technology	AU/R31712 Certificate III in Forklift Technology	AU/R31912 Certificate III in Elevating Work Platform Technology	AU/R32112 Certificate III in Automotive Body Repair Technology	AU/R32412 Certificate III in Automotive Refinishing Technology	AU/R40612 Certificate IV in Automotive Electrical Technology	AU/R40212 Certificate IV in Automotive Mechanical Diagnosis
Automotive Electrical Skill Set for Light Vehicle Technicians							X								
Mobile Plant Skill Set for Light Vehicle Technicians							X								
Mobile Plant Skill Set for Heavy Commercial Vehicle Technicians								X							
Mobile Plant Skill Set for Agricultural Equipment Technicians							X								
Vehicle Air Conditioning Service, Retrofit and Repair Skill Set	X	X		X	X									X	
Vehicle Air Conditioning Installation Skill Set					X									X	
Vehicle Air Conditioning Overhaul Skill Set					X									X	
Vehicle Air Conditioning Install and Overhaul Skill Set					X									X	
Vehicle Refrigerant Recovery Skill Set*		X	X	X	X	X	X	X	X	X	X				

\*Note: The Vehicle Refrigerant Recovery Skill Set can be undertaken as part of a qualification or as a stand alone skill set.



# Assessment Guidelines

## Introduction

These Assessment Guidelines provide the endorsed framework for assessment of units of competency in this Training Package. They are designed to ensure that assessment is consistent with the *Australian Quality Training Framework (AQTF) Essential Standards for Initial and Continuing Registration*. Assessments against the units of competency in this Training Package must be carried out in accordance with these Assessment Guidelines.

## Assessment System Overview

This section provides an overview of the requirements for assessment when using this Training Package, including a summary of the AQTF requirements; licensing and registration requirements; and assessment pathways.

Quality assessment underpins the credibility of the vocational education and training sector. The Assessment Guidelines of a Training Package are an important tool in supporting quality assessment.

Assessment within the National Skills Framework is the process of collecting evidence and making judgements about whether competency has been achieved to confirm whether an individual can perform to the standards expected in the workplace, as expressed in the relevant endorsed unit of competency.

Assessment must be carried out in accordance with the:

- benchmarks for assessment
- 
- principles of assessment
- rules of evidence
- assessment requirements set out in the AQTF

## Benchmarks for Assessment

The endorsed units of competency in this Training Package are the benchmarks for assessment. As such, they provide the basis for nationally recognised Australian Qualifications Framework (AQF) qualifications and Statements of Attainment issued by Registered Training Organisations (RTOs).

## Principles of Assessment

All assessments carried out by RTOs are required to demonstrate compliance with the principles of assessment:

- validity
- reliability
- flexibility
- fairness
- sufficiency

These principles must be addressed in the:

- design, establishment and management of the assessment system for this Training Package
- development of assessment tools, and
- the conduct of assessment.

### *Validity*

Assessment is valid when the process is sound and assesses what it claims to assess. Validity requires that:

- (a) assessment against the units of competency must cover the broad range of skills and knowledge that are essential to competent performance
- (b) assessment of knowledge and skills must be integrated with their practical application
- (c) judgement of competence must be based on sufficient evidence (that is, evidence gathered on a number of occasions and in a range of contexts using different assessment methods). The specific evidence requirements of each unit of competency provide advice on sufficiency

### *Reliability*

Reliability refers to the degree to which evidence presented for assessment is consistently interpreted and results in consistent assessment outcomes. Reliability requires the assessor to have the required competencies in assessment and relevant vocational competencies (or to assess in conjunction with someone who has the vocational competencies). It can only be achieved when assessors share a common interpretation of the assessment requirements of the unit(s) being assessed.

### *Flexibility*

To be flexible, assessment should reflect the candidate's needs; provide for recognition of competencies no matter how, where or when they have been acquired; draw on a range of methods appropriate to the context, competency and the candidate; and support continuous competency development.

### *Fairness*

Fairness in assessment requires consideration of the individual candidate's needs and characteristics, and any reasonable adjustments that need to be applied to take account of them. It requires clear communication between the assessor and the candidate to ensure that the candidate is fully informed about, understands and is able to participate in, the assessment process, and agrees that the process is appropriate. It also includes an opportunity for the person being assessed to challenge the result of the assessment and to be reassessed if necessary.

### *Sufficiency*

Sufficiency relates to the quality and quantity of evidence assessed. It requires collection of enough *appropriate* evidence to ensure that all aspects of competency have been satisfied and that competency can be demonstrated repeatedly. Supplementary sources of evidence may be necessary. The specific evidence requirements of each unit of competency provide advice on sufficiency. Sufficiency is also one of the rules of evidence.

## **Rules of Evidence**

The rules of evidence guide the collection of evidence that address the principles of validity and reliability, guiding the collection of evidence to ensure that it is valid, sufficient, current and authentic.

#### *Valid*

Valid evidence must relate directly to the requirements of the unit of competency. In ensuring evidence is valid, assessors must ensure that the evidence collected supports demonstration of the outcomes and performance requirements of the unit of competency together with the knowledge and skills necessary for competent performance. Valid evidence must encapsulate the breadth and depth of the unit of competency, which will necessitate using a number of different assessment methods.

#### *Sufficient*

Sufficiency relates to the quality and quantity of evidence assessed. It requires collection of enough appropriate evidence to ensure that all aspects of competency have been satisfied and that competency can be demonstrated repeatedly. Supplementary sources of evidence may be necessary. The specific evidence requirements of each unit of competency provide advice on sufficiency.

#### *Current*

In assessment, currency relates to the age of the evidence presented by a candidate to demonstrate that they are still competent. Competency requires demonstration of current performance, so the evidence collected must be from either the present or the very recent past.

#### *Authentic*

To accept evidence as authentic, an assessor must be assured that the evidence presented for assessment is the candidate's own work.

### **Assessment Requirements of the Australian Quality Training Framework**

Assessment leading to nationally recognised AQF qualifications and Statements of Attainment in the vocational education and training sector must meet the requirements of the AQTF as expressed in the AQTF 2010 *Essential Standards for Registration*.

The AQTF 2010 *Essential Standards for Initial and Continuing Registration* can be downloaded from <[www.training.com.au](http://www.training.com.au)>.

The following points summarise the assessment requirements.

#### **Registration of Training Organisations**

Assessment must be conducted by, or on behalf of, an RTO formally registered by a State or Territory Registering Body in accordance with the AQTF. The RTO must have the specific units of competency and/or AQF qualifications on its scope of registration.

#### **Quality Training and Assessment**

Each RTO must provide quality training and assessment across all its operations. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*, Standard 1.

#### **Assessor Competency Requirements**

Each person involved in training and assessment must be competent for the functions they perform. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*, Standard 1 for assessor (and trainer) competency requirements. See also the AQTF 2010 *Users' Guide to the Essential Standards for Registration* – Appendix 2.

### **Assessment Requirements**

The RTOs assessments, including RPL, must meet the requirements of the relevant endorsed Training Package. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

### **Assessment Strategies**

Each RTO must have strategies for training and assessment that meet the requirements of the relevant Training Package or accredited course and are developed in consultation with industry stakeholders. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

### **National Recognition**

Each RTO must recognise the AQF qualifications and Statements of Attainment issued by any other RTO. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

### **Access and Equity and Client Outcomes**

Each RTO must adhere to the principles of access and equity and maximise outcomes for its clients. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

### **Monitoring Assessments**

Training and/or assessment provided on behalf of the RTO must be monitored to ensure that it is in accordance with all aspects of the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

### **Recording Assessment Outcomes**

Each RTO must manage records to ensure their accuracy and integrity. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

### **Issuing AQF qualifications and Statement of Attainment**

Each RTO must issue AQF qualifications and Statements of Attainment that meet the requirements of the current *AQF Implementation Handbook* and the endorsed Training Packages within the scope of its registration. An AQF qualification is issued once the full requirements for a qualification, as specified in the nationally endorsed Training Package are met. A Statement of Attainment is issued when an individual has completed one or more units of competency from nationally recognised qualification(s)/courses(s). See the AQTF and the edition of the *AQF Implementation Handbook*—available on the AQF Council website <[www.aqf.edu.au](http://www.aqf.edu.au)>

### **Licensing/Registration Requirements**

This section provides information on licensing/registration requirements for this Training Package, with the following important disclaimer.

The developers of this Training Package consider that no licensing or registration requirements apply to RTOs, assessors or candidates with respect to this Training Package. Contact the relevant State or Territory Department(s) to check if there are any licensing or registration requirements with which you must comply.

Licensing may be applicable to assessors, RTOs and candidates in specific occupations. However, where the AUR12 Training Package may direct licensing, the regulation process is separate. There are no general licensing issues. However, specific licenses may be required in some occupations. Licensing occurs in NSW, in most areas covered by the package, while in QLD and WA, licensing is being introduced. Licensing in these jurisdictions is compatible with the RS&R Training Package.

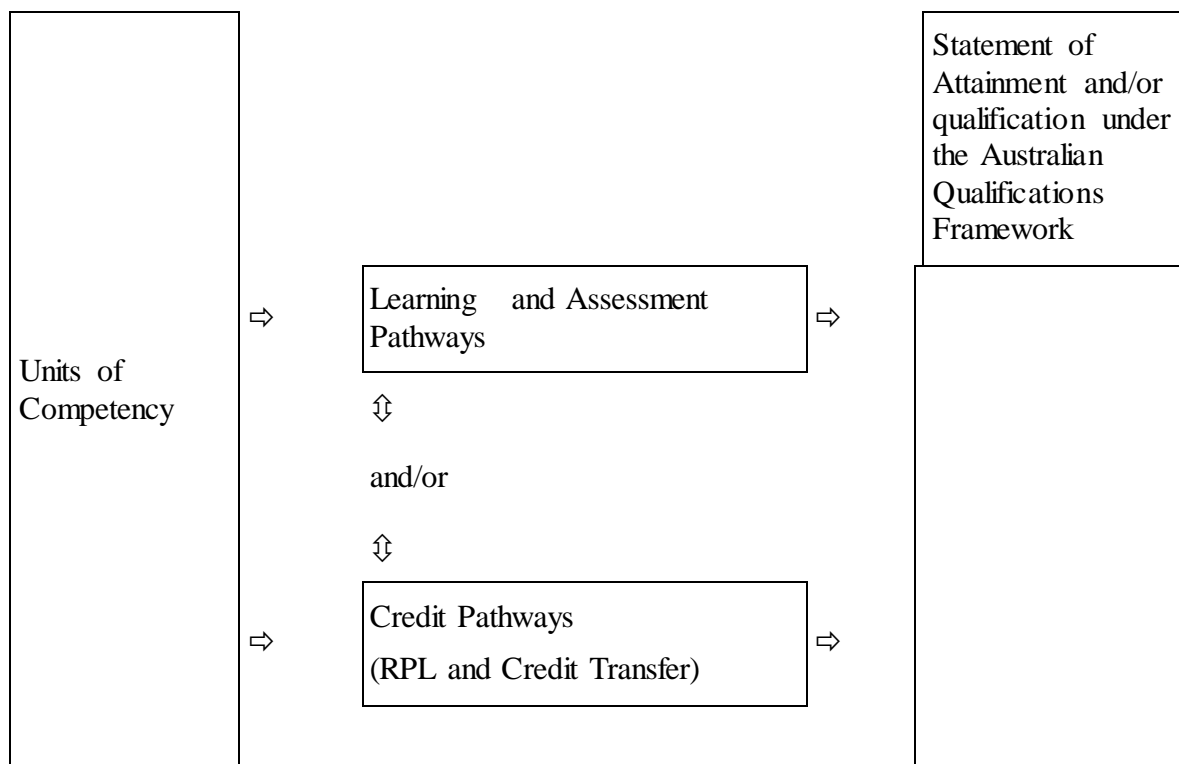
Contact the relevant State or Territory Department(s) to check if the licensing/registration requirements described below still apply, and to check if there are any others with which you must comply. For further information contact [Licence Recognition](http://www.licencerecognition.gov.au/authorities.aspx) (<http://www.licencerecognition.gov.au/authorities.aspx>)

## Pathways

The competencies in this Training Package may be attained in a number of ways including through:

- formal or informal education and training
- experiences in the workplace
- general life experience, and/or
- any combination of the above.

Assessment under this Training Package leading to an AQF qualification or Statement of Attainment may follow a learning and assessment pathway, or a recognition pathway, or a combination of the two as illustrated in the following diagram.



Each of these assessment pathways leads to full recognition of competencies held – the critical issue is that the candidate is competent, not how the competency was acquired. Assessment, by any pathway, must comply with the assessment requirements set out in the Assessment Guidelines of the Training Package, the AQTF and, where relevant, the Australian Qualifications Framework.

### **Learning and Assessment Pathways**

Usually, learning and assessment are integrated, with evidence being collected and feedback provided to the candidate at anytime throughout the learning and assessment process. Learning and assessment pathways may include structured programs in a variety of contexts using a range of strategies to meet different learner needs. Structured learning and assessment programs could be: group-based, work-based, project-based, self-paced, action learning-based; conducted by distance or e-learning; and/or involve practice and experience in the workplace.

Learning and assessment pathways to suit Australian Apprenticeships have a mix of formal structured training and structured workplace experience with formative assessment activities through which candidates can acquire and demonstrate skills and knowledge from the relevant units of competency.

### **Credit Pathways**

*Credit* is the value assigned for the recognition of equivalence in content between different types of learning and/or qualifications which reduces the volume of learning required to achieve a qualification.

Credit arrangements must be offered by all RTOs that offer Training Package qualifications. Each RTO must have a systematic institutional approach with clear, accessible and transparent policies and procedures.

Competencies already held by individuals can be formally assessed against the units of competency in this Training Package, and should be recognised regardless of how, when or where they were acquired, provided that the learning is relevant to the unit of competency outcomes.

### **Recognition of Prior Learning**

Recognition of Prior Learning (RPL) is an assessment process which determines the credit outcomes of an individual application for credit.

The availability of Recognition of Prior Learning (RPL) provides all potential learners with access to credit opportunities.

The recognition of prior learning pathway is appropriate for candidates who have previously attained skills and knowledge and who, when enrolling in qualifications, seek to shorten the duration of their training and either continue or commence working. This may include the following groups of people:

- existing workers;
- individuals with overseas qualifications;
- recent migrants with established work histories;

- people returning to the workplace; and
- people with disabilities or injuries requiring a change in career.
- 

As with all assessment, RPL assessment should be undertaken by academic or teaching staff with expertise in the subject, content of skills area, as well as knowledge of and expertise in RPL assessment policies and procedures.

Assessment methods used for RPL should provide a range of ways for individuals to demonstrate that they have met the required outcomes and can be granted credit. These might include:

- questioning (oral or written)
- consideration of a portfolio and review of contents
- consideration of third party reports and/or other documentation such as documentation such as articles, reports, project material, papers, testimonials or other products prepared by the RPL applicant that relate to the learning outcomes of the relevant qualification component
- mapping of learning outcomes from prior formal or non-formal learning to the relevant qualification components
- observation of performance, and
- participation in structured assessment activities the individual would normally be required to undertake if they were enrolled in the qualification component/s.

In a Recognition of Prior Learning (RPL) pathway, the candidate provides current, quality evidence of their competency against the relevant unit of competency. This process may be directed by the candidate and verified by the assessor. Where the outcomes of this process indicate that the candidate is competent, structured training is not required. The RPL requirements of the AQTF must be met.

As with all assessment, the assessor must be confident that the evidence indicates that the candidate is currently competent against the endorsed unit of competency. This evidence may take a variety of forms and might include certification, references from past employers, testimonials from clients, work samples and/or observation of the candidate. The onus is on candidates to provide sufficient evidence to satisfy assessors that they currently hold the relevant competencies. In judging evidence, the assessor must ensure that the evidence of prior learning is:

- authentic (the candidate's own work);
- valid (directly related to the current version of the relevant endorsed unit of competency);
- reliable (shows that the candidate consistently meets the endorsed unit of competency);
- current (reflects the candidate's current capacity to perform the aspect of the work covered by the endorsed unit of competency); and
- sufficient (covers the full range of elements in the relevant unit of competency and addresses the four dimensions of competency, namely task skills, task management skills, contingency management skills, and job/role environment skills).

### **Credit Transfer**

*Credit transfer is a process which provides learners with agreed and consistent credit outcomes based on equivalences in content between matched qualifications.*

This process involves education institutions:

- mapping, comparing and evaluating the extent to which the defined *learning outcomes and assessment requirements* of the individual *components of one qualification* are equivalent to the learning outcomes and assessment requirements of the individual components of another qualification
- making an educational judgment of the credit outcomes to be assigned between the matched components of the two qualifications
- setting out the agreed credit outcomes in a documented arrangement or agreement, and
- publicising the arrangement/agreement and credit available.

### Combination of Pathways

Credit may be awarded on the basis of a combination of credit transfer plus an individual RPL assessment for additional learning. Once credit has been awarded on the basis of RPL, subsequent credit transfer based on these learning outcomes should not include revisiting the RPL assessment but should be based on credit transfer or articulation or other arrangements between providers.

Where candidates for assessment have gained competencies through work and life experience and gaps in their competence are identified, or where they require training in new areas, a combination of pathways may be appropriate.

In such situations, the candidate may undertake an initial assessment to determine their current competency. Once current competency is identified, a structured learning and assessment program ensures that the candidate acquires the required additional competencies identified as gaps.

### Assessor Requirements

This section identifies the specific requirements on the vocational competence and experience for assessors, to ensure that they meet the needs of industry and their obligations under AQTF, and clarifies how others may contribute to the assessment process where one person alone does not hold all the required competencies.

### Assessor Competencies

The AQTF specifies mandatory competency requirements for assessors. For information, Element 1.4 from the AQTF 2007 *Essential Standards for Registration* follows:

- 1.4 Training and assessment are conducted by trainers and assessors who:
- a) have the necessary training and assessment competencies as determined by the National Quality Council or its successors, and
  - b) have the relevant vocational competencies at least to the level being delivered or assessed, and
  - c) can demonstrate current industry skills directly relevant to the training/assessment being undertaken, and
  - d) continue to develop their Vocational Education and Training (VET) knowledge and

skills as well as their industry currency and trainer/assessor competence.

\* See AQTF 2010 *Users' Guide to the Essential Standards for Registration* – Appendix 2

## **Designing Assessment Tools**

This section provides an overview on the use and development of assessment tools.

### **Use of Assessment Tools**

Assessment tools provide a means of collecting the evidence that assessors use in making judgements about whether candidates have achieved competency.

There is no set format or process for the design, production or development of assessment tools. Assessors may use prepared assessment tools, such as those specifically developed to support this Training Package, or they may develop their own.

### **Using Prepared Assessment Tools**

If using prepared assessment tools, assessors should ensure these relate to the current version of the relevant unit of competency. The current unit of competency can be checked on the National Register <[www.ntis.gov.au](http://www.ntis.gov.au)>.

### **Developing Assessment Tools**

When developing their own assessment tools, assessors must ensure that the tools:

- are benchmarked against the relevant unit or units of competency;
- are reviewed as part of the validation of assessment strategies required under the AQTF; and
- meet the assessment requirements expressed in the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

A key reference for assessors developing assessment tools is TAE10 Training and Education Training Package.

## **Language, Literacy and Numeracy**

The design of assessment tools must reflect the language, literacy and numeracy competencies required for the performance of a task in the workplace and not exceed these expectations.

## **Conducting Assessment**

This section details the mandatory assessment requirements and provides information on equity in assessment including reasonable adjustment.

## Mandatory Assessment Requirements

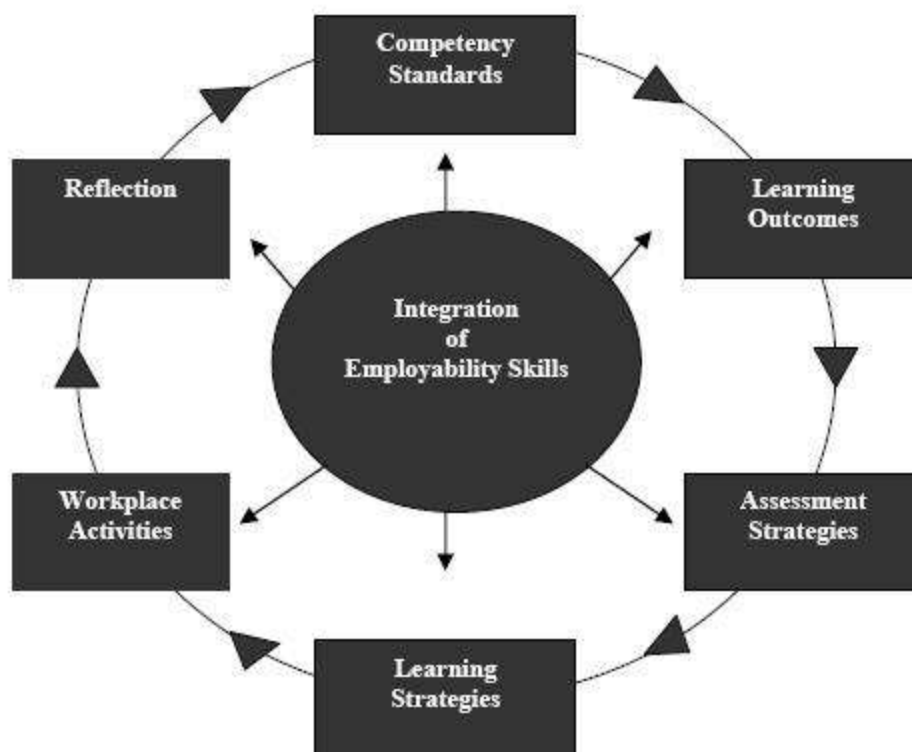
Assessments must meet the criteria set out in the AQTF 2010 *Essential Standards for Initial and Continuing Registration*. For information, the mandatory assessment requirements from Standard 1 from the AQTF 2010 *Essential Standards for Initial and Continuing Registration* are as follows:

### 1.5 Assessment, including Recognition of Prior Learning (RPL):

- a) meets the requirements of the relevant Training Package or accredited course
- b) is conducted in accordance with the principles of assessment and the rules of evidence
- c) meets workplace and, where relevant, regulatory requirements
- d) is systematically validated.

## Assessment of Employability Skills

Employability Skills are integral to workplace competency. As such, they must be considered in the design, customisation, delivery and assessment of vocational education and training programs in an integrated and holistic way, as represented diagrammatically below.



Employability Skills are embedded within each unit of competency, and an Employability Skills Summary is available for each qualification. Training providers must use Employability Skills information in order to design valid and reliable training and assessment strategies. This analysis could include:

- reviewing units of competency to locate relevant Employability Skills and determine how they are applied within the unit
- analysing the Employability Skills Summary for the qualification in which the unit or units are packaged to help clarify relevant industry and workplace contexts and the application of Employability Skills at that qualification outcome
- designing training and assessment to address Employability Skills requirements.

The National Quality Council has endorsed a model for assessing and reporting Employability Skills, which contains further suggestions about good practice strategies in teaching, assessing, learning and reporting Employability Skills. The model is available from <http://www.training.com.au/>.

The endorsed approach includes learners downloading qualification specific Employability Skills Summaries for Training Package qualifications from an online repository at <http://employabilityskills.training.com.au>

For more information on Employability Skills in Auto Skills Australia Training Packages go to the Auto Skills Australia website at ASA website.

Employability Skills are reported on each qualification using the following statement on the qualification testamur: "A summary of the Employability Skills developed through this qualification can be downloaded from <http://employabilityskills.training.com.au> "

### **Access and Equity**

An individual's access to the assessment process should not be adversely affected by restrictions placed on the location or context of assessment beyond the requirements specified in this Training Package: training and assessment must be bias-free.

Under the rules for their development, Training Packages must reflect and cater for the increasing diversity of Australia's VET clients and Australia's current and future workforce. The flexibilities offered by Training Packages should enhance opportunities and potential outcomes for all people so that we can all benefit from a wider national skills base and a shared contribution to Australia's economic development and social and cultural life.

### **Reasonable Adjustments**

It is important that education providers take meaningful, transparent and reasonable steps to consult, consider and implement reasonable adjustments for students with disability. Under the Disability Standards for Education 2005, education providers must make reasonable adjustments for people with disability to the maximum extent that those adjustments do not cause that provider unjustifiable hardship. While 'reasonable adjustment' and 'unjustifiable hardship' are different concepts and involve different considerations, they both seek to strike a balance between the interests of education providers and the interests of students with and without disability.

An adjustment is any measure or action that a student requires because of their disability, and which has the effect of assisting the student to access and participate in education and training on the same basis as students without a disability. An adjustment is reasonable if it achieves this purpose while taking into account factors such as the nature of the student's disability, the views of the student, the potential effect of the adjustment on the student and others who might be affected, and the costs and benefits of making the adjustment.

An education provider is also entitled to maintain the academic integrity of a course or program and to consider the requirements or components that are inherent or essential to its nature when assessing whether an adjustment is reasonable. There may be more than one adjustment that is reasonable in a given set of circumstances; education providers are required to make adjustments that are reasonable and that do not cause them unjustifiable hardship.

The Training Package Guidelines provides more information on reasonable adjustment, including examples of adjustments. Go to <http://www.deewr.gov.au/tpdh/Pages/home.aspx>.

### **Further Sources of Information**

*The section provides a listing of useful contacts and resources to assist assessors in planning, designing, conducting and reviewing of assessments against this Training Package.*

#### **Contacts**

Auto Skills Australia

Street Address

Level 4, 533 Little Lonsdale Street

MELBOURNE VIC 3000

Postal Address:

PO Box 13295

LAW COURTS VIC 8010

Ph: +613 8610 2500

Fax: +613 8610 2550

Email: [ASA email info@autoskillsaustralia.com.au](mailto:info@autoskillsaustralia.com.au)

Web: Auto Skills Australia Website (<http://www.autoskillsaustralia.com.au>)

Technical and Vocational Education and

Training (TVET) Australia Limited

Level 21, 390 St Kilda Road, Melbourne

VIC 3150

PO Box 12211, A'Beckett Street Post Office,

Melbourne, Victoria, 8006

Ph: +61 3 9832 8100

Fax: +61 3 9832 8198

Email: [sales@tvetaustralia.com.au](mailto:sales@tvetaustralia.com.au)

Web: [www.tvetaustralia.com.au](http://www.tvetaustralia.com.au)

For information on the TAE10 Training and Education Training Package contact:

Innovation & Business Skills Australia

Telephone: (03) 9815 7000

Facsimile: (03) 9815 7001

Email: [virtual@ibsa.org.au](mailto:virtual@ibsa.org.au)

Web: [www.ibsa.org.au](http://www.ibsa.org.au)

### **General Resources**

*AQF Implementation Handbook, Fourth Edition 2007. Australian Qualifications Framework Advisory Board, 2002* <[www.aqf.edu.au](http://www.aqf.edu.au)>

*Australian Quality Training Framework (AQTF) and AQTF 2010 Users' Guide to the Essential Standards for Registration –*  
<http://www.training.com.au/pages/menuitem5cbe14d51b49dd34b225261017a62dbc.aspx>

For general information and resources go to <http://www.training.com.au/>

The National Register is an electronic database providing comprehensive information about RTOs, Training Packages and accredited courses - <[www.ntis.gov.au](http://www.ntis.gov.au)>

The Training Package Development Handbook site provides National Quality Council policy for the development of Training Packages. The site also provides guidance material for the application of that policy, and other useful information and links.

<http://www.deewr.gov.au/Skills/Overview/Policy/TPDH/Pages/main.aspx>

### **Assessment Resources**

Registered training organisations (RTOs) are at the forefront of vocational education and training (VET) in Australia. They translate the needs of industry into relevant, quality, client-focussed training and assessment.

RTOs should strive for innovation in VET teaching and learning practices and develop highly flexible approaches to assessment which take cognisance of specific needs of learners, in order to improve delivery and outcomes of training.

Resources can be purchased or accessed from:

- TVET Australia – provides an integrated service to enable users of the national training system to identify and acquire training materials, identify copyright requirements and enter licenses for use of that material consistent with the scope and direction of the NQC.

<http://www.productservices.tvetaustralia.com.au/>

## **Competency Standards**

### **What is competency?**

The broad concept of industry competency concerns the ability to perform particular tasks and duties to the standard of performance expected in the workplace. Competency requires the application of specified skills, knowledge and attitudes relevant to effective participation in an industry, industry sector or enterprise.

Competency covers all aspects of workplace performance and involves performing individual tasks; managing a range of different tasks; responding to contingencies or breakdowns; and, dealing with the responsibilities of the workplace, including working with others. Workplace competency requires the ability to apply relevant skills, knowledge and attitudes consistently over time and in the required workplace situations and environments. In line with this concept of competency Training Packages focus on what is expected of a competent individual in the workplace as an outcome of learning, rather than focussing on the learning process itself.

Competency standards in Training Packages are determined by industry to meet identified industry skill needs. Competency standards are made up of a number of units of competency each of which describes a key function or role in a particular job function or occupation. Each unit of competency within a Training Package is linked to one or more AQF qualifications.

### **Contextualisation of Units of Competency by RTOs**

Registered Training Organisations (RTOs) may contextualise units of competency in this endorsed Training Package to reflect required local outcomes. Contextualisation could involve additions or amendments to the unit of competency to suit particular delivery methods, learner profiles, specific enterprise equipment requirements, or to otherwise meet local needs. However, the integrity of the overall intended outcome of the unit of competency must be maintained.

Any contextualisation of units of competency in this Training Package must be within the bounds of the following advice:

- RTOs must not remove or add to the number and content of elements and performance criteria.
- RTOs can include specific industry terminology in the range statement.
- Any amendments and additions to the range statement made by RTOs must not diminish the breadth of application of the competency, or reduce its portability.
- RTOs may add detail to the evidence guide in areas such as the critical aspects of evidence or required resources and infrastructure—but only where these expand the breadth of the competency and do not limit its use.

### **Components of Units of Competency**

The components of units of competency are summarised below, in the order in which they appear in each unit of competency.

#### **Unit Title**

The unit title is a succinct statement of the outcome of the unit of competency. Each unit of competency title is unique, both within and across Training Packages.

**Unit Descriptor**

The unit descriptor broadly communicates the content of the unit of competency and the skill area it addresses. Where units of competency have been contextualised from units of competency from other endorsed Training Packages, summary information is provided. There may also be a brief second paragraph that describes its relationship with other units of competency, and any licensing requirements.

**Employability Skills**

This sub-section contains a statement that the unit contains Employability skills.

**Pre-requisite Units (optional)**

If there are any units of competency that must be completed before the unit, these will be listed.

**Application of the Unit**

This sub-section fleshes out the unit of competency's scope, purpose and operation in different contexts, for example, by showing how it applies in the workplace.

**Competency Field (Optional)**

The competency field either reflects the way the units of competency are categorised in the Training Package or denotes the industry sector, specialisation or function. It is an optional component of the unit of competency.

**Sector (optional)**

The industry sector is a further categorisation of the competency field and identifies the next classification, for example an elective or supervision field.

**Elements of Competency**

The elements of competency are the basic building blocks of the unit of competency. They describe in terms of outcomes the significant functions and tasks that make up the competency.

**Performance Criteria**

The performance criteria specify the required performance in relevant tasks, roles, skills and in the applied knowledge that enables competent performance. They are usually written in passive voice. Critical terms or phrases may be written in bold italics and then defined in range statement, in the order of their appearance in the performance criteria.

**Required Skills and Knowledge**

The essential skills and knowledge are either identified separately or combined. *Knowledge* identifies what a person needs to know to perform the work in an informed and effective manner. *Skills* describe the application of knowledge to situations where understanding is converted into a workplace outcome.

**Range Statement**

The range statement provides a context for the unit of competency, describing essential operating conditions that may be present with training and assessment, depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. As applicable, the meanings of key terms used in the performance criteria will also be explained in the range statement.

### **Evidence Guide**

The evidence guide is critical in assessment as it provides information to the Registered Training Organisation (RTO) and assessor about how the described competency may be demonstrated. The evidence guide does this by providing a range of evidence for the assessor to make determinations, and by providing the assessment context. The evidence guide describes:

- conditions under which competency must be assessed including variables such as the assessment environment or necessary equipment;
- relationships with the assessment of any other units of competency;
- suitable methodologies for conducting assessment including the potential for workplace simulation;
- resource implications, for example access to particular equipment, infrastructure or situations;
- how consistency in performance can be assessed over time, various contexts and with a range of evidence; and
- the required underpinning knowledge and skills
- 

### **Employability Skills in Units of Competency**

The detail and application of Employability Skills facets will vary according to the job-role requirements of each industry. In developing Training Packages, industry stakeholders are consulted to identify appropriate facets of Employability Skills which are incorporated into the relevant units of competency and qualifications.

Employability Skills are not a discrete requirement contained in units of competency (as was the case with Key Competencies). Employability Skills are specifically expressed in the context of the work outcomes described in units of competency and will appear in elements, performance criteria, range statements and evidence guides. As a result, users of Training Packages are required to review the entire unit of competency in order to accurately determine Employability Skills requirements.

### **How Employability Skills relate to the Key Competencies**

The eight nationally agreed Employability Skills now replace the seven Key Competencies in Training Packages. Trainers and assessors who have used Training Packages prior to the introduction of Employability Skills may find the following comparison useful.

#### **Employability Skills    Mayer Key Competencies**

Communication                      Communicating ideas and information

Teamwork                              Working with others and in teams

Problem solving	Solving problems Using mathematical ideas and techniques
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Initiative and enterprise

Planning and organising	Collecting, analysing and organising information Planning and organising activities
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Self-management

Learning

Technology	Using technology
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When analysing the above table it is important to consider the relationship and natural overlap of Employability Skills. For example, using technology may involve communication skills and combine the understanding of mathematical concepts.

### **Explicitly embedding Employability Skills in units of competency**

This Training Package seeks to ensure that industry-endorsed Employability Skills are explicitly embedded in units of competency. The application of each skill and the level of detail included in each part of the unit will vary according to industry requirements and the nature of the unit of competency.

Employability Skills must be both explicit and embedded within units of competency. This means that Employability Skills will be:

- embedded in units of competency as part of the other performance requirements that make up the competency as a whole
- explicitly described within units of competency to enable Training Packages users to identify accurately the performance requirements of each unit with regards to Employability Skills.

This Training Package also seeks to ensure that Employability Skills are well-defined and written into units of competency so that they are apparent, clear and can be delivered and assessed as an essential component of unit work outcomes.

### **Sample unit of competency components showing Employability Skills**

The following table shows the sequence of a unit of competency, and each cell contains text taken from a range of units. It provides examples of where and how various Employability Skills could be embedded in each component.

Please note that in the example, the bracketed Employability Skills are provided for clarification only and would not be present in units of competency within this Training Package.

<b>Unit Title</b>	Give formal presentations and take part in meetings <b>(Communication)</b>
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<b>Unit Descriptor</b>	This unit covers the skills and knowledge required to promote the use and implementation of innovative work practices to effect change. <b>(Initiative and enterprise)</b>
<b>Element</b>	Proactively resolve issues. (problem solving)
<b>Performance Criteria</b>	Information is organised in a format suitable for analysis and dissemination in accordance with organisational requirements. <b>(Planning and organising)</b>
<b>Range Statement</b>	Software applications may include email, internet, word processing, spreadsheet, database or accounting packages. (technology)
<b>Required Skills and Knowledge</b>	<p>Modify activities depending on differing workplace contexts, risk situations and environments. <b>(Learning)</b></p> <p>Work collaboratively with others during a fire emergency. (teamwork)</p> <p>Instructions, procedures and other information relevant the maintenance of vessel and port security. <b>(Communication)</b></p> <p>Evidence of having worked constructively with a wide range of community groups and stakeholders to solve problems and adapt or design new solutions to meet identified needs in crime prevention. In particular, evidence must be obtained on the ability to:</p> <ul style="list-style-type: none"> <li>• assess response options to identified crime-prevention needs and determine the optimal action to be implemented</li> <li>• in consultation with relevant others, design an initiative to address identified issues. <b>(Initiative and enterprise).</b></li> </ul>
<b>Evidence Guide</b>	

### **Employability Skills Summaries and units of competency**

An Employability Skills Summary exists for each qualification. Summaries include broad advice on industry expectations with regard to Employability Skills at the qualification level. Summaries should be used by trainers and assessors to assist in identifying the Employability Skills requirements contained within units of competency.

## **Supporting Text Block**

Not applicable.

## AUR10112 Certificate I in Automotive Vocational Preparation

### Modification History

Release	Comment
Release 1	Replaces AUR10105 Certificate I in Automotive

## Description

This qualification is an introductory qualification to the automotive retail, service and repair industries and an entry to further training in several sectors. It is designed for application in a highly supervised context, such as VET in schools or other equivalent introduction or induction to industry environments. The range of technical skills and knowledge is limited.

### Job roles and employment outcomes

The Certificate I in Automotive Vocational Preparation offers entry-level training for those working or seeking to work in any of the automotive sectors covered by this Training Package such as:

- Bicycle
- Automotive Electrical
- Outdoor Power Equipment
- Light vehicle
- Vehicle Body and Paint - Detailing
- Motorcycle
- Marine
- Heavy Vehicle

They may undertake a range of simple tasks under close supervision. The qualification targets introductory employment, such as induction or probationary periods for automotive retail, service and repair employment. It may also be suitable for a cadetship, or part time and casual employment positions where a full range of skills are not required.

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways from the qualification

Further training pathways from this qualification include any Certificate II qualification within the AUR12 Automotive Industry Retail, Service and Repair Training Package or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the Automotive retail service and repair industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>Gathering, conveying, receiving and understanding verbal and written information and workplace instructions</li> <li>Communicating with clients, colleagues and others</li> <li>Understanding relevant industry definitions, terminology, symbols, abbreviations and language</li> <li>Recording relevant information using standard workplace documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>Working with colleagues and supervisors to prioritise and action tasks</li> <li>Providing assistance to other team members</li> <li>Relating to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>Solving routine problems related to hazards in the workplace, while under direct supervision</li> <li>Examining tools and equipment prior to use for damage, missing components or other defects</li> <li>Identifying typical faults and problems and taking necessary remedial action</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>Raising workplace health and safety (WHS) issues with the appropriate person</li> <li>Responding to change and workplace challenges</li> <li>Maximising use of resources by recycling, re-using or using appropriate disposal methods</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>Planning own work schedule to ensure tasks are completed on time</li> <li>Selecting and using appropriate materials, tools and equipment</li> <li>Sequencing tasks using time management techniques</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>Behaving in ways that contribute to an effective and safe working environment</li> <li>Identifying own roles and responsibilities</li> <li>Completing daily work activities</li> <li>Cleaning up work area</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>Listening to ideas and opinions of other members of the team</li> <li>Identifying own learning needs and seeking skill development</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the Employability Skills as identified by the Automotive retail service and repair industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	as required <ul style="list-style-type: none"><li>• Being open to learning new ideas and techniques</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Using computers and relevant software</li><li>• Using and operating a range of tools and equipment correctly and safely</li><li>• Applying measurements and calculations using appropriate equipment and formulas as required</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **8 units** of competency, consisting of:

- **5 core units**

plus

- **3 elective units** of which:
  - up to **3** elective units may be chosen from the elective groups listed below.
  - up to **2** elective units may be chosen from this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit Code	Unit Title
<b>Common - Environment</b>	
AURAEA1001	Identify environmental requirements in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA1001	Apply automotive workplace safety fundamentals
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR1003	Apply automotive electrical system fundamentals
<b>Mechanical - Light Vehicle - Technical</b>	
AURLTA1001	Apply automotive mechanical system fundamentals
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

### Elective units

Unit Code	Unit Title
<b>Common - Foundation Skills</b>	
AURFA2001	Use numbers in an automotive workplace

Unit Code	Unit Title
AURAF2002	Read in an automotive workplace
<b>Bicycles - Technical</b>	
AURBTA1001	Remove and tag bicycle components
AURBTA1002	Adjust bicycles
<b>Bicycles - Technical - Wheels and Tyres</b>	
AURBTJ2001	Remove, repair and fit bicycle tyres
<b>Electrical - Technical - Tools and Equipment</b>	
AURETK1001	Identify, select and use low voltage electrical test equipment
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR1001	Remove and tag automotive electrical system components
AURETR2006	Carry out soldering of electrical wiring and circuits
<b>Mechanical - Heavy Vehicle - Technical</b>	
AURHTA1001	Carry out heavy vehicle pre-repair operations
AURHTA2003	Remove and replace heavy commercial vehicle ancillary components and accessories
<b>Mechanical - Heavy Vehicle - Technical - Wheels and Tyres</b>	
AURHTJ1001	Inspect heavy commercial vehicle wheels and tyres
<b>Mechanical - Motorcycle - Technical</b>	
AURJTA1001	Perform minor adjustments to motorcycles
AURJTA1002	Remove and replace motorcycle components and accessories
<b>Mechanical - Motorcycle - Wheels and Tyres</b>	
AURJTJ2001	Remove, inspect and fit motorcycle wheel assemblies
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies

Unit Code	Unit Title
<b>Outdoor Power Equipment - Technical</b>	
AURPTA1001	Carry out pre-repair operations to outdoor power equipment
AURPTA1002	Perform minor adjustments to outdoor power equipment
AURPTA2006	Service line trimming systems and components
<b>Marine - Technical - Engines</b>	
AURRTE1001	Prepare outboard engines for wet-run testing
<b>Marine - Technical - Driveline and Final Drives</b>	
AURRTQ2001	Service inboard propeller drive systems
<b>Marine - Technical - Electrical and Electronic</b>	
AURRTR1001	Inspect, service and maintain marine battery storage systems
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA1001	Remove and tag steering, suspension and brake system components
AURTTA1002	Carry out workshop practice activities
AURTTA1003	Use and maintain basic measuring devices
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE1003	Remove and tag engine system components
<b>Vehicle Body - Technical - Body</b>	
AURVTN1001	Remove and tag vehicle body system components
AURVTN2008	Clean vehicle body and door cavities
<b>Vehicle Body - Technical - Paint</b>	
AURVTP2006	Prepare vehicle components for paint repairs

## Custom Content Section

Not applicable.

## AUR20112 Certificate II in Automotive Administration

### Modification History

Release	Comment
Release 1	Replaces AUR20105 Certificate III in Automotive Administration

## Description

This qualification covers the skills and knowledge required to perform a range of administrative tasks within an automotive retail, service or repair business.

### Job roles and employment outcomes

The Certificate II in Automotive Administration is intended to prepare new employees or recognise and develop existing workers who are performing office and administrative functions in an automotive retail, service or repair business.

Job roles related to this qualification include:

- clerical assistant
- office assistant
- receptionist
- service department receptionist
- on-line receptionist
- data entry assistant

### Application

This qualification is suitable for an Australian traineeship pathway.

## Pathways Information

### Pathways into the qualification

Credit will be granted towards this qualification to those who have completed AUR10112 Certificate I in Automotive Vocational Preparation in this Training Package or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30112 Certificate III in Automotive Administration or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills required by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• gathering, conveying and receiving verbal and written information</li> <li>• listening and understanding workplace instructions</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• working with colleagues and supervisors to contribute to organisation goals</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• solving routine problems related to hazards in the workplace, while under direct supervision</li> <li>• checking own work to ensure errors are minimal and work flow is maintained</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• raising workplace health and safety (WHS) issues with the WHS officer</li> <li>• recognise and respond to circumstances outside of personal competence</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• planning own work schedule to ensure tasks are completed on time</li> <li>• set, monitor and satisfy personal work goals</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• behaving in ways that contribute to an effective and safe working environment</li> <li>• identifying own roles and responsibilities</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>• listening to ideas and opinions of other members of the team</li> <li>• following safety procedures</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• operating a range of tools and equipment or specific machinery</li> </ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **10 units** of competency consisting of:

- **6 core units**

plus

- **4 elective units** of which:

- up to **4** elective units may be chosen from the elective units listed below
- up to **2** units may be chosen from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Administration</b>	
AURAAA2001	Work in an automotive administration environment
<b>Common – Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
AURAF2005	Write routine texts in an automotive workplace
<b>Common – Information Technology</b>	
AURAKA2001	Use information technology systems
<b>Common - Quality</b>	
AURAQA2001	Contribute to quality work outcomes
<b>Common –Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace

### Elective units

Unit code	Unit title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common – Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
<b>Common – Management , Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
AURAMA2002	Communicate business information
AURAMA3004	Maintain business image
<b>Common - Quality</b>	
AURAQA3003	Maintain quality systems
<b>Sales and Parts, Administration and Management - Administration</b>	
AURSAA2001	Process customer complaints
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2004	Carry out cash, credit and funds transfers
<b>Imported Units</b>	
BSBFIA303A	Process accounts payable and receivable
BSBINM202A	Handle mail
BSBITU305A	Conduct online transactions
BSBWOR204A	Use business technology
SIRXCCS202	Interact with customers

## Custom Content Section

Not applicable.

## AUR20212 Certificate II in Automotive Air Conditioning Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20705 Certificate II in Automotive Mechanical

## Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing and repairing air conditioning components and systems of cars and heavy vehicles within an automotive service and repair business.

### Job roles and employment outcomes

The Certificate II in Automotive Air Conditioning Technology is intended to prepare new employees or recognise and develop existing workers who are performing servicing and repair of air conditioning components/systems of vehicles in an automotive service or repair business.

Job roles related to this qualification include:

- automotive specialist – air conditioning

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service and repair functions in an automotive environment.

They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30612 Certificate III in Automotive Light Vehicle Mechanical Technology, AUR30312 Certificate III in Automotive Electrical Technology or other relevant qualifications.

## Licensing/Regulatory Information

Some jurisdictions may require this qualification for licensing purposes. In addition some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Understanding and carrying out verbal instructions from supervisors and others</li> <li>• Reading, understanding and completing workplace documentation, forms and records</li> <li>• Sharing work-related information with other team members using industry terminology</li> <li>• Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• Contributing positively to the work team environment</li> <li>• Working effectively with others in a socially diverse environment</li> <li>• Respecting and understanding the views of others</li> <li>• Giving, receiving and acting upon feedback</li> <li>• Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>• Seeking information and assistance to solve problems outside own area of responsibility</li> <li>• Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• Suggesting ideas for workplace improvement to supervisors and team members</li> <li>• Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>• Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>• Prioritising activities to achieve required outcomes</li> <li>• Planning and organising appropriate equipment and materials</li> <li>• Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• Following workplace safety requirements and other policies and procedures</li> <li>• Completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• Selecting and using appropriate equipment, materials, processes and procedures</li><li>• Asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Identifying personal strengths and weaknesses</li><li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Appropriately selecting and using tools and equipment</li><li>• Recognising and reporting faulty equipment</li><li>• Using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **13 units** of competency, consisting of:

- **7 core units**

plus

- **6 elective units** of which:

- up to **6** elective units may be chosen from the elective units listed below
- up to **3** elective units may be chosen from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
<b>Electrical - Technical - Air Conditioning and HVAC</b>	
AURETU2003	Service air conditioning and HVAC systems
AURETU3004	Diagnose and repair air conditioning and HVAC systems
AURETU3005	Retrofit and modify air conditioning and HVAC systems
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA3018	Carry out diagnostic procedures

### Elective units

Unit Code	Unit Title
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Unit Code	Unit Title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2011	Install and test basic ancillary electrical components
<b>Electrical - Technical - Air Conditioning and HVAC</b>	
AURETU2001	Install air conditioning systems
AURETU4007	Overhaul air conditioning system components
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	
AURTTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Vehicle body - Technical</b>	
AURVTA2001	Prepare vehicle, components and equipment for customer use

## Custom Content Section

Not applicable.

## AUR20312 Certificate II in Bicycle Mechanical Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20311 Certificate II in Bicycles

### Description

This qualification covers the skills and knowledge required to perform a range of routine assembly and servicing tasks within the bicycle industry. It is suitable for entry into the bicycle retail, service and repair sector.

#### Job roles and employment outcomes

The Certificate II in Bicycle Mechanical Technology is intended to prepare new employees or develop existing workers who are performing bicycle service tasks in the bicycle industry.

Job roles related to this qualification include:

- bicycle assembler
- bicycle service technician
- assistant mechanic
- bicycle sales assistant.

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## **Pathways Information**

### **Pathways into the qualification**

Credit will be granted towards this qualification to those who have completed relevant units of competency from AUR10112 Certificate I in Automotive Vocational Preparation in this Training Package or other relevant qualifications.

### **Pathways from the qualification**

Further training pathways from this qualification include AUR30212 Certificate III in Bicycle Mechanical Operations, AUR31012 Certificate III in Automotive Sales, or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the Bicycle Retail, Service and Repair sector for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification
<b>Communication</b>	<ul style="list-style-type: none"> <li>• understanding and carrying out verbal instructions from supervisors and others</li> <li>• reading, understanding and completing workplace documentation, forms and records</li> <li>• sharing work-related information with other team members using industry terminology</li> <li>• communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• contributing positively to the work team environment</li> <li>• working effectively with others in a socially diverse environment</li> <li>• respecting and understanding the views of others</li> <li>• giving, receiving and acting upon feedback</li> <li>• identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• recognising a problem or a potential problem within a bicycle component or system or with equipment</li> <li>• seeking information and assistance to solve problems outside own area of responsibility</li> <li>• solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• suggesting ideas for workplace improvement to supervisors and team members</li> <li>• positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>• taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>• prioritising activities to achieve required outcomes</li> <li>• planning and organising appropriate equipment and materials</li> <li>• planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• following workplace safety requirements and other policies and procedures</li> <li>• completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• identifying personal strengths and weaknesses</li><li>• acting upon feedback and accept opportunities to learn to improve work performance</li><li>• asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• appropriately setting up technological equipment</li><li>• recognising and reporting faulty equipment</li><li>• using appropriate tools and equipment</li><li>• applying knowledge of operating principles of bicycle components and systems</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **16 units** of competency, consisting of:

- **8 core units**

plus

- **8 elective units**, of which:

- up to **8** elective units may be chosen from the elective units listed below
- up to **3** elective units may be chosen from a Certificate II qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Bicycle - Technical</b>	
AURBTA2004	Assemble box bicycles for retail sale
<b>Bicycle - Technical - Wheels and Tyres</b>	
AURBTJ2001	Remove, repair and fit bicycle tyres
<b>Bicycle - Technical - Accessories</b>	
AURBTV2001	Fit and adjust bicycle accessories
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

**Elective units**

Unit code	Unit title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
AURAF2005	Write routine texts in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
AURAMA2002	Communicate business information
<b>Common - Quality</b>	
AURAQA2001	Contribute to quality work outcomes
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Bicycle - Sales and Marketing</b>	
AURBCA2001	Work in a retail bicycle environment
AURBCA2002	Select and adjust bicycle to fit rider
<b>Bicycle - Technical</b>	
AURBTA2003	Assemble bicycles
<b>Bicycle – Technical - Brakes</b>	
AURBTB2001	Service and repair bicycle mechanical braking systems
AURBTB2002	Service bicycle hydraulic braking systems
<b>Bicycle - Technical - Steering and Suspension</b>	

Unit code	Unit title
AURBTD2001	Service bicycle steering systems
AURBTD2002	Service bicycle suspension systems
<b>Bicycle - Technical - Wheels and Tyres</b>	
AURBTJ2002	Service bicycle wheels and hubs
<b>Bicycle - Technical - Tools and Equipment</b>	
AURBTK2001	Use and maintain specialised bicycle repair tools
<b>Bicycle - Technical - Driveline and Final Drives</b>	
AURBTQ2001	Service bicycle drivetrain systems
<b>Sales and Parts, Administration And Management - Administration</b>	
AURSAA2001	Process customer complaints
<b>Sales and Parts, Administration And Management - Sales and Marketing</b>	
AURSCA2002	Present stock and sales area
AURSCA2003	Apply sales procedures
AURSCA2005	Sell products
AURSCA2006	Promote products and services
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
<b>Imported Units</b>	
BSBCUS301B	Deliver and monitor a service to customers
BSBFLM312C	Contribute to team effectiveness
BSBPRO401A	Develop product knowledge
BSBWOR202A	Organise and complete daily work activities

Unit code	Unit title
BSBWOR301B	Organise personal work priorities and development
MEM18001C	Use hand tools
MEM18002B	Use power tools/hand held operations
SIRXCCS202	Interact with customers
SIRXINV001A	Perform stock control procedures
SIRXINV002A	Maintain and order stock
TLIA3039A	Receive and store stock

## Custom Content Section

Not applicable.

## AUR20412 Certificate II in Automotive Electrical Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20408 Certificate II in Automotive Electrical Technology

### Description

This qualification covers the skills and knowledge required to perform a range of tasks related to installation, assembly and servicing of electrical components/systems of motor vehicles within the automotive electrical installation, service and repair technology sector.

#### Job roles and employment outcomes

The Certificate II in Automotive Electrical Technology is intended to prepare prospective employees and existing workers who undertake service and repair of vehicle electrical components and systems in the automotive electrical industry. Work may include performing component/system fabricating, fitting or modifying operations of automotive aftermarket electrical componentry and installation.

Employment outcomes targeted by this qualification include:

- automotive electrical component installer
- automotive electrical trainee / assistant

#### Application

This qualification is suitable for an Australian Apprenticeship pathway.

### Pathways Information

#### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed relevant units of competency from AUR10112 Certificate I in Automotive Vocational Preparation in this Training Package or other relevant qualifications.

#### Pathways from the qualification

Further training pathways from this qualification include AUR30312 Certificate III in Automotive Electrical Technology, or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive, service and repair sector for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification
<b>Communication</b>	<ul style="list-style-type: none"> <li>understanding and carrying out verbal instructions from supervisors and others</li> <li>reading, understanding and completing workplace documentation, forms and records</li> <li>sharing work-related information with other team members using industry terminology</li> <li>communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>contributing positively to the work team environment</li> <li>working effectively with others in a socially diverse environment</li> <li>respecting and understanding the views of others</li> <li>giving, receiving and acting upon feedback</li> <li>identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a problem or a potential problem within a vehicle component or system or with equipment</li> <li>seeking information and assistance to solve problems outside own area of responsibility</li> <li>solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>suggesting ideas for workplace improvement to supervisors and team members</li> <li>positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>prioritising activities to achieve required outcomes</li> <li>planning and organising appropriate equipment and materials</li> <li>planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>following workplace safety requirements and other policies and procedures</li> <li>completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• identifying personal strengths and weaknesses</li><li>• acting upon feedback and accept opportunities to learn to improve work performance</li><li>• asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• appropriately setting up technological equipment</li><li>• recognising and reporting faulty equipment</li><li>• using appropriate tools and equipment</li><li>• applying knowledge of operating principles of vehicle components and systems</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **16 units** of competency, consisting of:

- **10 core units**

plus

- **6 elective units**, of which:
  - up to **6** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be chosen from a Certificate II qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical – Technical – Tools and Equipment</b>	
AURETK2002	Use and maintain automotive electrical test equipment
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2007	Demonstrate knowledge of automotive electrical circuits and wiring systems
AURETR2008	Remove and replace electrical units and assemblies
AURETR2009	Install, test and repair vehicle lighting and wiring systems
AURETR2011	Install and test basic ancillary electrical components
AURETR2012	Test and repair basic electrical circuits
AURETR2015	Inspect and service batteries

### Elective units

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
AURAF2005	Write routine texts in an automotive workplace
<b>Common – Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
AURAMA2002	Communicate business information
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
AURATA2002	Read and interpret engineering drawings
AURATA2003	Produce drawings from design concepts
<b>Electrical – Technical – Tools and Equipment</b>	
AURETK1001	Identify, select and use low voltage electrical test equipment
<b>Electrical – Technical - Body</b>	
AURETR2042	Remove, refit and test electrical componentry for operation following body repair activities
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR1003	Apply automotive electrical system fundamentals
AURETR2005	Install, test and repair electrical security systems and components
AURETR2010	Fabricate, test and repair wiring harnesses and looms
AURETR2013	Inspect and service charging systems

Unit code	Unit title
AURETR2014	Inspect and service starting systems
AURETR2016	Read and apply vehicle wiring schematics and drawings
AURETR3025	Test, charge and replace batteries
<b>Electrical – Technical - Air Conditioning and HVAC</b>	
AURETU2001	Install air conditioning systems
AURETU2002	Recover vehicle refrigerants
AURETU2003	Service air conditioning and HVAC systems
AURETU3004	Diagnose and repair air conditioning and HVAC systems
AURETU3005	Retrofit and modify air conditioning and HVAC systems
<b>Outdoor Power Equipment – Technical - Electrical and Electronic</b>	
AURPTR2002	Test and service outdoor electric powered equipment
<b>Marine – Technical - Electrical and Electronic</b>	
AURRTR1001	Inspect, service and maintain marine battery storage systems
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2001	Select automotive parts and products
AURSCA2003	Apply sales procedures
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2008	Produce patterns and templates
AURTTA2009	Carry out pre-repair operations (mechanical)
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous – Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	

Unit code	Unit title
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2003	Remove and replace vehicle interior trim components
AURVTT2004	Trim vehicle components
AURVTT2005	Select and apply trim and fabric materials
AURVTT2006	Select and apply trim and fabric adhesives
<b>Vehicle Body – Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR20512 Certificate II in Automotive Servicing Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20505 Certificate II in Automotive Vehicle Servicing

### Description

This qualification covers the skills and knowledge required to perform a range of servicing operations on light vehicles, heavy vehicles and/or motorcycles within an automotive service or repair business.

#### Job roles or employment outcomes

The Certificate II in Automotive Servicing Technology is intended to prepare new employees or recognise and develop existing workers who are performing servicing and maintenance of vehicles in an automotive service or repair business.

Employment outcomes targeted by this qualification include:

- automotive serviceperson.

#### Application

This qualification is suitable for an Australian Apprenticeship pathway.

### Pathways Information

#### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

#### Pathways from the qualification

Further training pathways from this qualification include AUR30612 Certificate III in Light Vehicle Mechanical Technology or other relevant qualifications.

### Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Understanding and carrying out verbal instructions from supervisors and others</li> <li>• Reading, understanding and completing workplace documentation, forms and records</li> <li>• Sharing work-related information with other team members using industry terminology</li> <li>• Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• Contributing positively to the work team environment</li> <li>• Working effectively with others in a socially diverse environment</li> <li>• Respecting and understanding the views of others</li> <li>• Giving, receiving and acting upon feedback</li> <li>• Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>• Seeking information and assistance to solve problems outside own area of responsibility</li> <li>• Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• Suggesting ideas for workplace improvement to supervisors and team members</li> <li>• Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>• Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>• Prioritising activities to achieve required outcomes</li> <li>• Planning and organising appropriate equipment and materials</li> <li>• Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• Following workplace safety requirements and other policies and procedures</li> <li>• Completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• Selecting and using appropriate equipment, materials, processes and procedures</li><li>• Asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Identifying personal strengths and weaknesses</li><li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Appropriately selecting and using tools and equipment</li><li>• Recognising and reporting faulty equipment</li><li>• Using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **20 units** of competency, consisting of:

- **13 core units**

plus

- **7 elective units**, of which:

- up to 7 elective units may be chosen from the elective units listed below
- up to 4 elective units may be chosen from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit Code	Unit Title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2015	Inspect and service batteries
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	
AURTTC2001	Inspect and service cooling systems
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	

Unit Code	Unit Title
AURTTD2002	Inspect and service steering systems
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies
AURTTQ2003	Service final drive (driveline)

**Elective units**

Unit Code	Unit Title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETH3001	Depower battery electric vehicles
AURETR3025	Test, service and charge batteries
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2001	Select tyres and rims for specific applications (light)

Unit Code	Unit Title
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)
AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2006	Service hydraulic systems
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTF2001	Service petrol fuel systems
AURTTF2002	Service diesel fuel injection systems
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>	
AURTTJ2001	Balance wheels and tyres
<b>Mechanical Miscellaneous - Technical - Alternative Fuels</b>	
AURTTL3007	Service LPG fuel systems
<b>Mechanical Miscellaneous - Technical -Transmission</b>	
AURTTX2002	Inspect and service transmissions (manual)
AURTTX2003	Inspect and service transmissions (automatic)
AURTTX2004	Service transmissions (hydrostatic)
AURTTX2005	Inspect and service clutch systems
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2001	Inspect and service emission control systems

## Custom Content Section

Not applicable.

## AUR20612 Certificate II in Marine Mechanical Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20611 Certificate II in Marine

### Description

This qualification covers the skills and knowledge required to perform a limited range of mechanical service tasks within the marine industry. It is suitable for entry into the marine mechanical service and repair sector.

#### Job roles and employment outcomes

The employment outcomes of Certificate II in Marine Mechanical Technology would see an individual working in the marine mechanical service and repair industry.

The marine service technician would be typically involved in tasks involving defined and known routines, methods and procedures and providing solutions to a limited range of predictable problems. Some complex and non-routine activities involving autonomy and judgement in structured and stable contexts may be expected.

#### Application

This qualification is suitable for an Australian Apprenticeship pathway.

### Pathways Information

#### Pathways into the qualification

Credit will be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

#### Pathways from the qualification

Further training pathways from this qualification include AUR30512 Certificate III in Marine Mechanical Technology or other relevant qualifications.

### Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the Marine service and repair industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>• understanding and carrying out verbal instructions from supervisors and others</li> <li>• reading and understanding workplace documents</li> <li>• completing written workplace documentation, forms, logs and diaries</li> <li>• sharing work-related information with other team members</li> <li>• communicating with people from a range of social, cultural and ethnic backgrounds</li> <li>• seeking and acting upon feedback</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• contributing positively to the work team environment</li> <li>• working effectively with others in a socially diverse environment</li> <li>• respecting and understanding the views of others</li> <li>• giving and receiving feedback</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• recognising a problem or a potential problem within a marine component or system or with equipment</li> <li>• seeking information and assistance to solve problems outside own area of responsibility</li> <li>• solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• making adjustments to improve own performance</li> <li>• suggesting ideas for workplace improvement to supervisors and team members</li> <li>• positively adapting to changes in workplace procedures or arrangements</li> <li>• taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• understanding how own job role fits into the wider workplace context</li> <li>• planning daily work tasks to work safely and manage risks according to workplace procedures</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• following workplace safety requirements and other policy and procedures</li> <li>• managing own time</li> <li>• completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"><li>• completing non-routine tasks as requested</li><li>• selecting appropriate equipment and materials</li><li>• asking for advice and assistance</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• identifying personal strength and weaknesses</li><li>• positively accepting opportunities to learn</li><li>• acting upon feedback to improve work performance</li><li>• asking questions to gain information</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• appropriately setting up technological equipment</li><li>• using workplace diagnosis technology</li><li>• recognising and reporting faulty equipment</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **18 units** of competency, consisting of:

- **12 core units** listed below

plus

- **6 elective units**, of which:
  - up to **6** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be chosen from a Certificate II qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2005	Write routine texts in an automotive workplace
<b>Common - Health and Safety</b>	
AURAS2002	Apply safe working practices in an automotive workplace
<b>Marine - Environment</b>	
AURREA2001	Apply environmental and sustainability best practice in a marine workplace
<b>Marine - Technical - Engines</b>	
AURRTE2002	Service outboard engines and components
AURRTE2003	Service inboard engines and components
<b>Marine - Technical - Driveline and Final Drives</b>	
AURRTQ2001	Service inboard propeller drive systems
AURRTQ2002	Service jet drive propulsion systems
<b>Marine - Technical - Transmissions</b>	

Unit code	Unit title
AURRTX2001	Service marine outboard and stern drive transmissions
AURRTX2002	Service marine inboard transmissions
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

**Elective units**

Unit code	Unit title
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
AURAMA2002	Communicate business information
<b>Common - Quality</b>	
AURAQA2001	Contribute to quality work outcomes
<b>Electrical - Technical - Tools and Equipment</b>	
AURETK1001	Identify, select and use low voltage electrical test equipment
AURETK2002	Use and maintain automotive electrical test equipment
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR1003	Apply automotive electrical system fundamentals
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2009	Install, test and repair vehicle lighting and wiring systems
AURETR2011	Install and test basic ancillary electrical components
AURETR2012	Test and repair basic electrical circuits

Unit code	Unit title
AURETR2015	Inspect and service batteries
AURETR3025	Test, charge and replace batteries
<b>Mechanical - Light Vehicle - Technical</b>	
AURLTA1001	Apply automotive mechanical system fundamentals
<b>Marine</b>	
AURRGA3003	Moor a motor-driven vessel
<b>Marine - Technical</b>	
AURRTA2001	Service deck, hull and cabin equipment
AURRTA3005	Repair deck, hull and cabin equipment
AURRTA3006	Water test a vessel
<b>Marine - Technical - Engines</b>	
AURRTE1001	Prepare outboard engines for wet-run testing
AURRTE3006	Diagnose and repair outboard engines and components
AURRTE3007	Diagnose and repair inboard engines and components
AURRTE3010	Water test engines in tanks
<b>Marine - Technical - Electrical and Electronic</b>	
AURRTR1001	Inspect, service and maintain marine battery storage systems
AURRTR3004	Install marine electrical systems and components
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA2010	Service and repair trailers up to 4.5 tonnes
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	

Unit code	Unit title
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTTF2002	Service diesel fuel injection systems
AURTTTF3005	Inspect and repair engine forced induction systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures
<b>Imported Units</b>	
BSBFLM312C	Contribute to team effectiveness
BSBWOR202A	Organise and complete daily work activities
TLID1001A	Shift materials safely using manual handling methods

## Custom Content Section

Not applicable.

## AUR20712 Certificate II in Automotive Vocational Preparation

### Modification History

Release	Comment
Release 1	New qualification
Release 2	Unit Titles Changed: AURJTJ2001 - Remove, inspect and fit motorcycle wheel assemblies AURLTJ2003 - Remove, inspect and refit light vehicle wheel assemblies.
Release 3	20 new imported units added to elective bank: AURAF009 Carry out research into the automotive industry AURETK003 Operate electrical test equipment AURETR046 Remove and refit vehicle batteries AURETR047 Recharge vehicle batteries AURETR048 Construct and test basic electronic circuits AURTTA027 Carry out basic vehicle servicing operations AURTTB007 Remove and replace brake assemblies AURTTTC004 Remove and replace radiators AURTTD006 Remove and replace vehicle front suspension springs AURTTD007 Remove and replace steering assemblies AURTTE006 Remove and replace conventional engine assemblies AURTTE007 Dismantle and assemble single cylinder four-stroke petrol engines AURTTE008 Dismantle and assemble multi-cylinder four-stroke petrol engines AURTTE009 Remove and replace engine cylinder heads AURTTJ003 Remove and replace wheel and tyre assemblies AURTTX012 Dismantle and assemble conventional manual transmissions AURTTX013 Remove and replace clutch assemblies AURVTA005 Clean vehicles

	AURVTP029 Prepare surface and prime repaired body panels AURTTW010 Set up and use welding equipment
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## Description

This qualification covers the skills and knowledge required to perform a limited range of tasks related to familiarisation and inspection of mechanical and electrical components and systems of cars, heavy vehicles, outdoor power equipment, bicycles, marine craft and motorcycles. This qualification also covers the skills and knowledge required to perform minor maintenance and repair of an automotive vehicle body. The range of technical skills and knowledge is limited.

### Job roles and employment outcomes

The Certificate II in Automotive Vocational Preparation prepares prospective employees to undertake work in the broader automotive industry.

Job roles related to this qualification include:

- trades assistant
- vehicle service assistant
- automotive service assistant
- trainee serviceperson
- automotive trainee.

### Application

This qualification provides individuals with an introduction to the automotive industry as well as some of the basic skills needed. It is an appropriate level for an individual undertaking work experience, or in a probationary period in employment.

The qualification is particularly applicable to school-based studies as an entry-level pathway to employment, and is suitable as an Australian traineeship or apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR12 Training Package Certificate III qualifications or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive retail, service and repair industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>• understanding and carrying out verbal instructions from supervisors and others</li> <li>• reading and understanding workplace documents</li> <li>• completing written workplace documentation, forms, logs and diaries</li> <li>• sharing work-related information with other team members</li> <li>• communicating with people from a range of social, cultural and ethnic backgrounds</li> <li>• seeking and acting on feedback</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• contributing positively to the work team environment</li> <li>• working effectively with others in a socially diverse environment</li> <li>• respecting and understanding the views of others</li> <li>• giving and receiving feedback</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• recognising a problem or potential problem with automotive component, system or equipment</li> <li>• seeking information and assistance to solve problems outside own area of responsibility</li> <li>• solving problems in own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• making adjustments to improve own performance</li> <li>• suggesting ideas for workplace improvement to supervisors and team members</li> <li>• positively adapting to changes in workplace procedures and arrangements</li> <li>• taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• understanding how own job role fits into the wider workplace context</li> <li>• planning daily work tasks to work safely and manage risks according to workplace procedures</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• following workplace safety requirements and other policy and procedures</li> <li>• managing own time</li> <li>• completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"><li>• completing non-routine tasks as requested</li><li>• selecting appropriate equipment and materials</li><li>• asking for advice and assistance</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• identifying personal strengths and weaknesses</li><li>• positively accepting opportunities to learn</li><li>• acting on feedback to improve work performance</li><li>• asking questions to gain information</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• appropriately setting up technological equipment</li><li>• using workplace diagnosis technology</li><li>• recognising and reporting faulty equipment</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **12 units of competency, consisting of:**

- **7 core units**
- **plus**
- **5 elective units**, of which:
  - up to **5** elective units may be chosen from the elective units listed below
  - up to **2** elective units may be chosen from a Certificate I or Certificate II qualification in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common – Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR1003	Apply automotive electrical system fundamentals
<b>Mechanical – Light Vehicle – Technical</b>	
AURLTA1001	Apply automotive mechanical system fundamentals
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

### Elective units

Unit code	Unit title
<b>Common – Foundation Skills</b>	
AURAF2005	Write routine texts in an automotive workplace
<b>Common – Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Common – Quality</b>	
AURAQA2001	Contribute to quality work outcomes
<b>Bicycle – Technical</b>	
AURBTA1001	Remove and tag bicycle components
<b>Bicycle – Technical – Wheels and Tyres</b>	
AURBTJ2001	Remove, repair and fit bicycle tyres
<b>Bicycle – Technical – Tools and Equipment</b>	
AURBTK2001	Use and maintain specialised bicycle repair tools
<b>Bicycle – Technical – Driveline and Final Drives</b>	
AURBTQ2001	Service bicycle drivetrain systems
<b>Bicycle – Technical – Accessories</b>	
AURBTV2001	Fit and adjust bicycle accessories
<b>Electrical – Technical – Tools and Equipment</b>	
AURETK1001	Identify, select and use low voltage electrical test equipment
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR1001	Remove and tag automotive electrical system components
AURETR1002	Test, service and maintain battery storage systems
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2009	Install, test and repair vehicle lighting and wiring systems
AURETR2015	Inspect and service batteries

Unit code	Unit title
<b>Mechanical – Heavy Vehicle – Technical – Steering and Suspension</b>	
AURHTD2001	Inspect and service heavy commercial vehicle suspension systems
<b>Mechanical – Heavy Vehicle – Technical – Fuel Systems</b>	
AURHTF2001	Inspect heavy commercial vehicle fuel systems and components
<b>Mechanical – Heavy Vehicle – Technical – Wheels and Tyres</b>	
AURHTJ1001	Inspect heavy commercial vehicle wheels and tyres
<b>Mechanical – Heavy Vehicle – Technical – Driveline and Final Drives</b>	
AURHTQ2001	Inspect heavy commercial vehicle driveline components
<b>Mechanical – Motorcycle – Technical</b>	
AURJTA1001	Perform minor adjustments to motorcycles
AURJTA1002	Remove and replace motorcycle components and accessories
<b>Mechanical – Motorcycle – Technical – Steering and Suspension</b>	
AURJTD2001	Inspect and service motorcycle suspension systems
AURJTD2002	Inspect and service motorcycle steering systems
<b>Mechanical – Motorcycle – Technical – Wheels and Tyres</b>	
AURJTJ2001	Remove, inspect and fit motorcycle wheel assemblies
<b>Mechanical – Light Vehicle – Technical – Wheels and Tyres</b>	
AURLTJ2003	Remove, inspect and refit light vehicle wheel assemblies
<b>Outdoor Power Equipment – Technical</b>	
AURPTA1001	Carry out pre-repair operations to outdoor power equipment
AURPTA1002	Perform minor adjustments to outdoor power equipment
AURPTA2003	Service and repair rotary cutting systems
AURPTA2006	Service line trimming systems and components
<b>Outdoor Power Equipment – Technical – Engines</b>	

Unit code	Unit title
AURPTE2002	Service engines and engine components (outdoor power equipment)
<b>Marine – Technical – Engines</b>	
AURRTE1001	Prepare outboard engines for wet-run testing
AURRTE2002	Service outboard engines and components
<b>Marine – Technical – Driveline and Final Drives</b>	
AURRTQ2001	Service inboard propeller drive systems
AURRTQ2002	Service jet drive propulsion systems
<b>Marine – Technical – Electrical and Electronic</b>	
AURRTR1001	Inspect, service and maintain marine battery storage systems
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA1001	Remove and tag steering, suspension and brake system components
AURTTA1002	Carry out workshop practice activities
AURTTA1003	Use and maintain basic measuring devices
AURTTA2004	Carry out servicing operations
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous – Technical – Engines</b>	
AURTTE1003	Remove and tag engine system components
<b>Mechanical Miscellaneous – Technical – Driveline and Final Drives</b>	
AURTTQ2002	Remove and refit driveline components
<b>Vehicle Body – Technical – Tools and Equipment</b>	
AURVTK2001	Use and maintain vehicle body repair hand tools
<b>Vehicle Body – Technical – Body</b>	
AURVTN2003	Carry out pre-repair vehicle body operations

Unit code	Unit title
<b>Vehicle Body – Technical – Paint</b>	
AURVTP2006	Prepare vehicle components for paint repairs
AURVTP2008	Clean and polish vehicle exterior paint
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2008	Clean and finish vehicle interior trim and seats
<b>Imported Units</b>	
AURAF009	Carry out research into the automotive industry
AURETK003	Operate electrical test equipment
AURETR046	Remove and refit vehicle batteries
AURETR047	Recharge vehicle batteries
AURETR048	Construct and test basic electronic circuits
AURTTA027	Carry out basic vehicle servicing operations
AURTTB007	Remove and replace brake assemblies
AURTTC004	Remove and replace radiators
AURTTD006	Remove and replace vehicle front suspension springs
AURTTD007	Remove and replace steering assemblies
AURTTE006	Remove and replace conventional engine assemblies
AURTTE007	Dismantle and assemble single cylinder four-stroke petrol engines
AURTTE008	Dismantle and assemble multi-cylinder four-stroke petrol engines
AURTTE009	Remove and replace engine cylinder heads
AURTTJ003	Remove and replace wheel and tyre assemblies
AURTTX012	Dismantle and assemble conventional manual transmissions
AURTTX013	Remove and replace clutch assemblies
AURVTA005	Clean vehicles

Unit code	Unit title
AURVTP029	Prepare surface and prime repaired body panels
AURVTW010	Set up and use welding equipment

## Custom Content Section

Not applicable.

## AUR20812 Certificate II in Outdoor Power Equipment Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20811 Certificate II in Outdoor Power Equipment

## Description

This qualification covers the skills and knowledge required to perform a limited range of service and repair tasks on outdoor power equipment. It is suitable for entry into the outdoor power equipment service and repair sector.

### Job roles and employment outcomes

The Certificate II in Outdoor Power Equipment Technology is intended to prepare new employees or develop existing workers to perform a limited range of service and repair tasks in the outdoor power equipment industry.

Job outcomes targeted by this qualification include:

- service technicians

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30712 Certificate III in Outdoor Power Equipment Technology, AUR31012 Certificate III in Automotive Sales, or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the outdoor power equipment industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification
<b>Communication</b>	<ul style="list-style-type: none"> <li>• understanding and carrying out verbal instructions from supervisors and others</li> <li>• reading, understanding and completing workplace documentation, forms and records</li> <li>• sharing work-related information with other team members using industry terminology</li> <li>• communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• contributing positively to the work team environment</li> <li>• working effectively with others in a socially diverse environment</li> <li>• respecting and understanding the views of others</li> <li>• giving, receiving and acting upon feedback</li> <li>• identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• recognising a problem or a potential problem within a sales and customer service environment</li> <li>• seeking information and assistance to solve problems outside own area of responsibility</li> <li>• solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• suggesting ideas for workplace improvement to supervisors and team members</li> <li>• positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>• taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>• prioritising activities to achieve required outcomes</li> <li>• planning and organising appropriate equipment and materials</li> <li>• planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• following workplace safety requirements and other policies and procedures</li> <li>• completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the outdoor power equipment industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification</b>
	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• identifying personal strengths and weaknesses</li><li>• acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• appropriately setting up technological equipment</li><li>• using tools and equipment efficiently and safely</li><li>• recognising and reporting faulty equipment</li><li>• using information and communication technology</li><li>• applying knowledge of outdoor power equipment components and operating principles</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **16 units** of competency, consisting of:

- **8 core units** listed below

plus

- **8 elective units**, of which:
  - up to **8** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2015	Inspect and service batteries
<b>Outdoor Power Equipment - Technical - Engines</b>	
AURPTE2002	Service engines and engine components (outdoor power equipment)
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

### Elective units

Unit code	Unit title
<b>Outdoor Power Equipment - Technical</b>	
AURPTA1001	Carry out pre-repair operations to outdoor power equipment
AURPTA1002	Perform minor adjustments to outdoor power equipment
AURPTA2003	Service and repair rotary cutting systems
AURPTA2004	Service and repair drum cutting systems
AURPTA2005	Service and repair chainsaw cutting systems
AURPTA2006	Service line trimming systems and components
AURPTA2007	Service and repair post-boring systems
AURPTA2008	Service and repair post-hole digging systems
AURPTA2009	Service and repair reciprocating cutting systems
AURPTA2010	Service pumping systems
AURPTA3011	Repair pumping systems
<b>Outdoor Power Equipment - Technical - Engines</b>	
AURPTE3003	Repair engines and engine components (outdoor power equipment)
<b>Outdoor Power Equipment - Technical - Electrical and Electronic</b>	
AURPTR3001	Test and service 240v portable generators

## Custom Content Section

Not applicable.

## AUR20912 Certificate II in Automotive Body Repair Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20905 Certificate II in Automotive Vehicle Body

### Description

This qualification covers the skills and knowledge required to perform a range of basic tasks when repairing and maintaining the automotive body of cars and other vehicles.

#### Job roles and employment outcomes

The Certificate II in Automotive Body Repair Technology prepares new employees or recognises and develops existing workers who perform repair and maintenance operations in an automotive repair facility.

Job roles related to this qualification include:

- vehicle body repair assistant
- vehicle paint-less dent repair assistant
- vehicle painter assistant
- vehicle trimmer assistant
- vehicle glazing assistant
- vehicle dismantler
- vehicle detailer
- vehicle body assembler
- vehicle tinter

#### Application

This qualification is suitable for an Australian apprenticeship pathway.

## **Pathways Information**

### **Pathways into the qualification**

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### **Pathways from the qualification**

Further training pathways from this qualification include any of the four streams in AUR32112 Certificate III in Automotive Body Repair Technology or other relevant qualifications.

## **Licensing/Regulatory Information**

Some jurisdictions require this qualification for licensing purposes. In addition some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills required by industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>gathering, conveying and receiving verbal and written information</li> <li>listening and understanding workplace instructions</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>working with colleagues and supervisors to contribute to organisational goals</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>solving routine problems related to hazards in the workplace, while under direct supervision</li> <li>checking own work to ensure errors are minimal and work flow is maintained</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>raising workplace health and safety (WHS) issues with the WHS officer</li> <li>recognising and responding to circumstances outside of personal competence</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work schedule to ensure tasks are completed on time</li> <li>setting, monitoring and satisfying personal work goals</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>behaving in ways that contribute to an effective and safe work environment</li> <li>identifying own roles and responsibilities</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>listening to ideas and opinions of other members of the team</li> <li>following safety procedures</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>operating a range of tools and equipment or specific machinery</li> </ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **13 units** of competency consisting of:

- **5 core units**

plus

- **3 specialist elective units** in **one** of the selected specialist groups relating to occupational streams

plus

- **5 general elective units**, of which:
  - up to **5** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Foundation Skills</b>	
AURAF2002	Read in an automotive workplace
<b>Common – Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Vehicle Body – Environment – Body</b>	
AURVEN2001	Apply environmental regulations and best practice in the body repair industry

### Specialist elective units

#### Group A: Auto Body Repair

Unit code	Unit title
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Unit code	Unit title
<b>Vehicle Body – Technical – Body</b>	
AURVTN2002	Carry out panel repairs
AURVTN2003	Carry out pre-repair vehicle body operations
AURVTN3016	Repair body panels incorporating filler

**Group B: Paint-Less Dent Repair**

Unit code	Unit title
<b>Vehicle Body – Technical – Body</b>	
AURVTN3013	Carry out paint-less dent repairs
<b>Vehicle Body – Technical – Paint</b>	
AURVTP3020	Carry out denibbing, buffing and polishing
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2003	Remove and replace vehicle interior trim components

**Group C: Automotive Painting**

Unit code	Unit title
<b>Vehicle Body – Technical – Paint</b>	
AURVTP2001	Apply paint removal methods
AURVTP2003	Prepare spray painting materials and equipment
AURVTP2006	Prepare vehicle components for paint repairs

**Group D: Automotive Trimming**

Unit code	Unit title
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2002	Carry out trim repairs and alterations
AURVTT2003	Remove and replace vehicle interior trim components

Unit code	Unit title
AURVTT2004	Trim vehicle components

**Group E: Automotive Glazing**

Unit code	Unit title
<b>Vehicle Body – Technical – Glazing</b>	
AURVTG2002	Remove and install rubber glazed windscreens
AURVTG2004	Remove and install direct glazed windscreens
AURVTG3009	Remove and install fixed body glass

**Group F: Automotive Dismantling**

Unit code	Unit title
<b>Vehicle Body – Regulatory or Legal – Body</b>	
AURVLN2001	Apply legal requirements for vehicle dismantlers
<b>Vehicle Body – Technical – Body</b>	
AURVTN2007	Remove salvageable components
AURVTN2037	Disassemble and test vehicle units and components

**Group G: Automotive Detailing**

Unit code	Unit title
<b>Vehicle Body – Technical</b>	
AURVTA2001	Prepare vehicle, components and equipment for customer use
<b>Vehicle Body – Technical – Body</b>	
AURVTN2008	Clean vehicle body and door cavities
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2008	Clean and finish vehicle interior trim and seats

**Group H: Vehicle Body Assembling**

Unit code	Unit title
<b>Electrical – Technical – Body</b>	
AURETR2042	Remove, refit and test electrical componentry for operation following body repair activities
<b>Vehicle Body – Technical – Body</b>	
AURVTN2004	Remove, replace and realign bolt-on panels, sections and fittings
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2009	Remove and replace seats and internal fittings

**Group I: Vehicle Tinting**

Unit code	Unit title
<b>Vehicle Body – Technical</b>	
AURVTA2001	Prepare vehicle, components and equipment for customer use
<b>Vehicle Body – Technical – Glazing</b>	
AURVTG2006	Apply window tinting
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2003	Remove and replace vehicle interior trim components

**General elective units**

Unit code	Unit title
<b>Common – Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
<b>Electrical – Technical – Hybrid Vehicle and Battery Electric Vehicle</b>	
AURETH3001	Depower battery electric vehicles
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR3025	Test, charge and replace batteries
<b>Mechanical – Light Vehicle – Technical – Wheels and Tyres</b>	

AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies
<b>Electrical – Technical – Air Conditioning and HVAC</b>	
AURETU2002	Recover vehicle refrigerants
<b>Vehicle Body – Technical</b>	
AURVTA2001	Prepare vehicle, components and equipment for customer use
<b>Vehicle Body – Technical – Glazing</b>	
AURVTG2001	Repair laminated glass
AURVTG2003	Remove and install butyl sealed windscreens
AURVTG2007	Clean glass surfaces
AURVTG3010	Remove and install movable body glass
AURVTG3011	Install side windows
<b>Vehicle Body – Technical – Tools and Equipment</b>	
AURVTK2001	Use and maintain vehicle body repair hand tools
<b>Vehicle Body – Technical – Body</b>	
AURVTN2004	Remove, replace and realign bolt-on panels, sections and fittings
AURVTN2005	Remove and fit protector mouldings, transfers and decals
AURVTN2009	Clean vehicle engine and engine compartment
AURVTN2010	Clean vehicle underbody
AURVTN2011	Remove and install rear vision mirrors
<b>Vehicle Body – Technical – Paint</b>	
AURVTP2002	Carry out masking procedures
AURVTP2005	Apply rust prevention and sound deadening materials
AURVTT2007	Clean and finish plastic trim and fittings
AURVTP2008	Clean and polish vehicle exterior paint
AURVTP3010	Prepare spray booths and paint drying equipment

AURVTP3013	Prepare substrate for refinishing
AURVTP3019	Prepare and paint plastic components
AURVTP3020	Carry out denibbing, buffing and polishing
AURVTP3021	Restore vehicle exterior paint
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2001	Carry out sewing repairs and alterations
AURVTT2005	Select and apply trim and fabric materials
AURVTT2006	Select and apply trim and fabric adhesives
AURVTT3021	Select and use adhesives
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2007	Conduct oxy-acetylene, thermal heating and cutting

## Custom Content Section

Not applicable.

## AUR21012 Certificate II in Motorsport Technology

### Modification History

Release	Comment
Release 1	Replaces AUR21011 Certificate II in Motorsport

## Description

This qualification covers the skills and knowledge required to perform basic mechanical servicing and repairs for motorsport vehicles. It is suitable for entry into the motorsport industry.

### Job roles and employment outcomes

The Certificate II in Motorsport Technology offers training for individuals to perform vehicle servicing in a motorsport environment.

Employment outcomes targeted by this qualification include:

- a junior member or general hand within a race team.

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service and repair functions in a motorsport environment. They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship arrangement.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30912 Certificate III in Motorsport Technology, AUR30612 Certificate III in Light Vehicle Mechanical Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>• understanding and carrying out verbal instructions from supervisors and others</li> <li>• reading and understanding workplace documents</li> <li>• completing written workplace documentation, forms and records</li> <li>• sharing work-related information with other team members</li> <li>• communicating with people from a range of social, cultural and ethnic backgrounds</li> <li>• seeking and acting upon feedback</li> <li>• using industry terminology</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• contributing positively to the work team environment</li> <li>• working effectively with others in a socially diverse environment</li> <li>• respecting and understanding the views of others</li> <li>• giving and receiving feedback</li> <li>• identifying and describing own role and role of others</li> </ul>
<b>Problem-solving</b>	<ul style="list-style-type: none"> <li>• recognising a problem or a potential problem within a motorsport environment</li> <li>• seeking information and assistance to solve problems outside own area of responsibility</li> <li>• solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• making adjustments to improve own performance</li> <li>• suggesting ideas for workplace improvement to supervisors and team members</li> <li>• positively adapting to changes in workplace procedures or arrangements</li> <li>• taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• understanding how own job role fits into the wider workplace context</li> <li>• planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>• prioritising activities to achieve required outcomes</li> <li>• planning and organising appropriate equipment and materials</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• following workplace safety requirements and other policies and procedures</li><li>• managing own time</li><li>• completing known delegated tasks on time</li><li>• completing non-routine tasks as requested</li><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• asking for advice and assistance</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• identifying personal strength and weaknesses</li><li>• positively accepting opportunities to learn</li><li>• acting upon feedback to improve work performance</li><li>• asking questions to gain information</li><li>• identifying sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• appropriately selecting and using tools and equipment</li><li>• recognising and reporting faulty equipment</li><li>• using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **16 units** of competency, consisting of:

- **8 core units** listed below
- plus
- **8 elective units**, of which:
  - up to **8** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be chosen from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environmental</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)
<b>Motorsport</b>	
AURMGA2001	Set up and dismantle temporary work location and equipment
<b>Motorsport - Management, Leadership and Supervision</b>	
AURMMA2001	Operate in a motorsport environment
<b>Motorsport - Technical</b>	
AURMTA2001	Prepare and service a light competition vehicle
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Imported Units</b>	

Unit code	Unit title
MSAENV272B	Participate in environmentally sustainable work practices

**Elective units**

Unit code	Unit title
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
AURATA2002	Read and interpret engineering drawings
AURATA2003	Produce drawings from design concepts
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2009	Install, test and repair vehicle lighting and wiring systems
AURETR2010	Fabricate, test and repair wiring harnesses and looms
AURETR2011	Install and test basic ancillary electrical components
AURETR2012	Test and repair basic electrical circuits
AURETR2015	Inspect and service batteries
AURETR2042	Remove, refit and test electrical componentry for operation following body repair activities
AURETR3025	Test, charge and replace batteries
AURETR3026	Remove, replace and program electrical and electronic units and assemblies
<b>Mechanical - Light Vehicle - Technical - Engines</b>	
AURLTE2001	Remove and install light vehicle engine assemblies
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2001	Select tyres and rims for specific applications (light)
AURLTJ2003	Remove, inspect and refit light vehicle wheel assemblies

Unit code	Unit title
<b>Motorsport - Support and Logistics</b>	
AURMBA2001	Transport a light competition vehicle and support equipment
<b>Motorsport - Officiating</b>	
AURMDA2001	Develop and update motorsport industry knowledge
AURMDA2002	Assist with motorsport officiating duties
<b>Motorsport - Regulatory or Legal</b>	
AURMLA2001	Comply with motorsport rules and regulations when officiating
<b>Motorsport - Health and Safety</b>	
AURMSA2001	Follow motorsport safety and risk management procedures
<b>Motorsport - Technical</b>	
AURMTA3006	Perform torquing and fastening
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
AURTTB2002	Attach friction materials and radius grind
AURTTB2003	Machine brake drums and brake disc rotors
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	
AURTTC2001	Inspect and service cooling systems
AURTTC2002	Carry out radiator repairs
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	
AURTTD2001	Inspect steering systems
AURTTD2002	Inspect and service steering systems
AURTTD2003	Inspect suspension systems

Unit code	Unit title
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTF2001	Service petrol fuel systems
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>	
AURTTJ2001	Balance wheels and tyres
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies
AURTTQ2003	Service final drive (driveline)
<b>Mechanical Miscellaneous - Technical - Fabrication</b>	
AURTTTS2001	Fabricate exhaust system and components
<b>Mechanical Miscellaneous - Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW2001	Carry out soft soldering techniques
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX2002	Inspect and service transmissions (manual)
AURTTX2003	Inspect and service transmissions (automatic)
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2001	Inspect and service emission control systems
AURTTZ2002	Repair exhaust system components
<b>Vehicle Body – Technical - Fabrication</b>	
AURVTS2006	Carry out fabrication of components

Unit code	Unit title
<b>Vehicle Body – Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2002	Carry out brazing procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2005	Carry out spot welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures
AURVTW3006	Carry out thermoplastic welding procedures

## Custom Content Section

Not applicable.

## AUR21112 Certificate II in Automotive Sales

### Modification History

Release	Comment
Release 1	Replaces AUR21105 Certificate II in Automotive Sales

### Description

This qualification covers the skills and knowledge required to perform sales-related tasks in the automotive retail, service or repair industry.

#### Job roles and employment outcomes

The Certificate II in Automotive Sales prepares new employees or recognises and develops existing workers who are performing general sales and marketing functions in an automotive retail, service or repair business.

Job roles related to this qualification include:

- service station attendant or salesperson
- bicycle salesperson
- outdoor equipment salesperson
- sales assistant.

#### Application

This qualification is suitable for an Australian traineeship pathway.

#### Additional qualification advice

The Certificate II in Automotive Sales may be attained as a generic qualification, or when a particular occupational outcome is required. Advice is provided in the qualification on the recommended units of competency for specialisation areas.

## **Pathways Information**

### **Pathways into the qualification**

Credit will be granted towards this qualification to those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### **Pathways from the qualification**

Further training pathways from this qualification include AUR31012 Certificate III in Automotive Sales or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills required by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Communication</b>	<ul style="list-style-type: none"> <li>gathering, conveying and receiving verbal and written information</li> <li>listening and understanding workplace instructions</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>working with colleagues and supervisors to contribute to organisational goals</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>solving routine problems related to hazards in the workplace, while under direct supervision</li> <li>checking own work to ensure errors are minimal and work flow is maintained</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>raising workplace health and safety (WHS) issues with the WHS officer</li> <li>recognising and responding to circumstances outside of personal competence</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work schedule to ensure tasks are completed on time</li> <li>setting, monitoring and satisfying personal work goals</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>behaving in ways that contribute to an effective and safe work environment</li> <li>identifying own roles and responsibilities</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>listening to ideas and opinions of other members of the team</li> <li>following safety procedures</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>operating a range of tools and equipment or specific machinery</li> </ul>

## Packaging Rules

### Packaging Rules

To be awarded this qualification, competency must be demonstrated in **12 units** of competency, consisting of:

- **6 core units**

plus

- **3 specialist elective units** in **one** of the selected specialist groups relating to occupational streams

plus

- **3 general elective units**, of which:
  - up to **3** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be chosen from a Certificate II qualification or above in this training package or another endorsed training package or accredited course, provided that the units chosen contribute to the vocational outcome of the qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2002	Present stock and sales area
AURSCA2006	Promote products and services
<b>Sales and Parts, Administration and Management – Regulatory or Legal</b>	
AURSLA2001	Apply legal requirements relating to product sales
<b>Imported Units</b>	
SIRXRSK001A	Minimise theft

### Specialist elective units

#### Group A: Service Station Sales and Service

Unit code	Unit title
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2005	Sell products
<b>Imported Units</b>	
SIRXCCS201	Apply point-of-sale handling procedures
SIRXINV002A	Maintain and order stock
SIRXMER201	Merchandise products
SIRXWHS302	Maintain store safety
TLIA2020A	Replenish stock

**Group B: Bicycle Sales**

Unit code	Unit title
<b>Common – Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Bicycle – Technical</b>	
AURBTA2004	Assemble box bicycles for retail sale
<b>Bicycle – Technical – Accessories</b>	
AURBTV2001	Fit and adjust bicycle accessories
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2005	Sell products
<b>Imported Units</b>	
SIRXINV002A	Maintain and order stock
SIRXMER201	Merchandise products
SIRXWHS302	Maintain store safety

**Group C: Outdoor Power Equipment Sales**

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA3003	Build customer relations
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2003	Apply sales procedures
<b>Imported Units</b>	
SIRXICT001A	Operate retail technology
SIRXINV001A	Perform stock control procedures
TLIA2013A	Receive goods

**General elective units**

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA3003	Build customer relations
<b>Common – Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common – Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
<b>Common – Management, Leadership and Supervision</b>	
AURAMA3004	Maintain business image

Unit code	Unit title
<b>Common – Quality</b>	
AURAQA2001	Contribute to quality work outcomes
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2003	Apply sales procedures
AURSCA2004	Carry out cash, credit and funds transfers
<b>Imported Units</b>	
BSBITU305A	Conduct online transactions
ICAWEB201A	Use social media tools for collaboration and engagement
SIRXCCS201	Apply point-of-sale handling procedures
SIRXFIN201	Balance and secure point-of-sale terminal

## Custom Content Section

Not applicable.

## AUR21212 Certificate II in Automotive Underbody Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20705 Certificate II in Automotive Mechanical

## Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing underbody system components of cars and heavy vehicles within an automotive service and repair business.

### Job roles and employment outcomes

The Certificate II in Automotive Underbody Technology is intended to prepare new employees or recognise and develop existing workers who are performing servicing of underbody systems of vehicles in an automotive service or repair business.

Job roles related to this qualification include:

- automotive vehicle serviceperson

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service functions in an automotive environment.

They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR32512 Certificate III in Automotive Underbody Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>Understanding and carrying out verbal instructions from supervisors and others</li> <li>Reading, understanding and completing workplace documentation, forms and records</li> <li>Sharing work-related information with other team members using industry terminology</li> <li>Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>Contributing positively to the work team environment</li> <li>Working effectively with others in a socially diverse environment</li> <li>Respecting and understanding the views of others</li> <li>Giving, receiving and acting upon feedback</li> <li>Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>Seeking information and assistance to solve problems outside own area of responsibility</li> <li>Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>Suggesting ideas for workplace improvement to supervisors and team members</li> <li>Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>Prioritising activities to achieve required outcomes</li> <li>Planning and organising appropriate equipment and materials</li> <li>Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>Following workplace safety requirements and other policies and procedures</li> <li>Completing known delegated tasks on time</li> <li>Selecting and using appropriate equipment, materials, processes</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	and procedures <ul style="list-style-type: none"><li>• Asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Identifying personal strengths and weaknesses</li><li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Appropriately selecting and using tools and equipment</li><li>• Recognising and reporting faulty equipment</li><li>• Using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **14 units of competency, consisting of:**

- **8 core units**

plus

- **6 elective units**, of which
  - up to **6** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be chosen from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	
AURTTD2002	Inspect and service steering systems
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2002	Repair exhaust system components

**Elective units**

<b>Unit code</b>	<b>Unit title</b>
<b>Common- Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)
AURLTJ2003	Remove, inspect and refit light vehicle wheel assemblies
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2003	Machine brake drums and brake disc rotors
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies
AURTTQ2003	Service final drive (driveline)
<b>Mechanical Miscellaneous - Technical - Fabrication</b>	
AURTTS2001	Fabricate exhaust system and components
<b>Mechanical Miscellaneous – Technical - Transmission</b>	
AURTTX2002	Inspect and service transmissions (manual)
AURTTX2003	Inspect and service transmissions (automatic)
<b>Vehicle Body - Technical – Welding, Grinding, Machining and Soldering</b>	

Unit code	Unit title
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR21312 Certificate II in Automotive Braking System Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20705 Certificate II in Automotive Mechanical

## Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing and repairing of braking components and systems of cars and heavy vehicles within an automotive service and repair business. It is suitable for entry into the automotive retail, service and repair industry.

### Job roles and employment outcomes

The Certificate II in Automotive Braking System Technology is intended to prepare new employees or recognise and develop existing workers who are performing servicing and repair of braking components/systems of vehicles in an automotive service or repair business. Job roles related to this qualification include:

- automotive braking systems specialist.

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service and repair functions in an automotive environment.

They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR32512 Certificate III in Automotive Underbody Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Understanding and carrying out verbal instructions from supervisors and others</li> <li>• Reading, understanding and completing workplace documentation, forms and records</li> <li>• Sharing work-related information with other team members using industry terminology</li> <li>• Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• Contributing positively to the work team environment</li> <li>• Working effectively with others in a socially diverse environment</li> <li>• Respecting and understanding the views of others</li> <li>• Giving, receiving and acting upon feedback</li> <li>• Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>• Seeking information and assistance to solve problems outside own area of responsibility</li> <li>• Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• Suggesting ideas for workplace improvement to supervisors and team members</li> <li>• Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>• Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>• Prioritising activities to achieve required outcomes</li> <li>• Planning and organising appropriate equipment and materials</li> <li>• Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• Following workplace safety requirements and other policies and procedures</li> <li>• Completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• Selecting and using appropriate equipment, materials, processes and procedures</li><li>• Asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Identifying personal strengths and weaknesses</li><li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Appropriately selecting and using tools and equipment</li><li>• Recognising and reporting faulty equipment</li><li>• Using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **12 units** of competency, consisting of:

- **7 core units**
- plus
- **5 elective units**, of which:
  - up to **5** elective units may be chosen from the elective units listed below
  - up to **2** elective units may be drawn from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Engines</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment

### Elective units

Unit Code	Unit Title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2002	Attach friction materials and radius grind
AURTTB2003	Machine brake drums and brake disc rotors
AURTTB2004	Inspect and service air braking systems
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>	
AURTTJ2002	Remove and refit wheel hubs and associated brake components

## Custom Content Section

Not applicable.

## AUR21412 Certificate II in Automotive Cooling System Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20705 Certificate II in Automotive Mechanical

## Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing and repairing cooling system components and systems of vehicles in the automotive service and repair industry.

### Job roles and employment outcomes

The Certificate II in Automotive Cooling System Technology prepares new employees or recognises and develops existing workers who service and repair vehicle cooling systems in an automotive service or repair business.

Job roles related to this qualification include:

- automotive radiator repair specialist.

### Application

This qualification provides individuals with the skills and knowledge to perform a range of mechanical operations involving known routines, methods and procedures and to take some accountability for the quality of outcomes.

The qualification is suitable for an Australian apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30612 Certificate III in Light Vehicle Mechanical Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>understanding and carrying out verbal instructions from supervisors and others</li> <li>reading, understanding and completing workplace documentation, forms and records</li> <li>sharing work-related information with other team members using industry terminology</li> <li>communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>contributing positively to the work team environment</li> <li>working effectively with others in a socially diverse environment</li> <li>respecting and understanding the views of others</li> <li>giving, receiving and acting on feedback</li> <li>identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a problem or potential problem in a vehicle component or system servicing environment</li> <li>seeking information and assistance to solve problems outside own area of responsibility</li> <li>solving problems in own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>suggesting ideas for workplace improvement to supervisors and team members</li> <li>positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>prioritising activities to achieve required outcomes</li> <li>planning and organising appropriate equipment and materials</li> <li>planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>following workplace safety requirements and other policies and procedures</li> <li>completing known delegated tasks on time</li> <li>selecting and using appropriate equipment, materials, processes</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>and procedures</li><li>• asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• identifying personal strengths and weaknesses</li><li>• acting on feedback and accepting opportunities to learn to improve work performance</li><li>• asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• appropriately selecting and using tools and equipment</li><li>• recognising and reporting faulty equipment</li><li>• using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **14 units** of competency, consisting of:

- **8 core units**

plus

- **6 elective units**, of which:

- up to **6** elective units may be chosen from the elective units listed below
- up to **3** elective units may be chosen from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common – Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>	
AURTTTC2001	Inspect and service cooling systems
AURTTTC2002	Carry out radiator repairs
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous – Technical – Welding, Grinding, Machining and Soldering</b>	
AURTTW2001	Carry out soft soldering techniques
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW3006	Carry out thermoplastic welding procedures

**Elective units**

<b>Unit code</b>	<b>Unit title</b>
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common – Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
<b>Electrical – Technical – Air Conditioning and HVAC</b>	
AURETU2002	Recover vehicle refrigerants
AURETU2003	Service air conditioning and HVAC systems
AURETU3004	Diagnose and repair air conditioning and HVAC systems
AURETU3005	Retrofit and modify air conditioning and HVAC systems
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous – Technical – Engines</b>	
AURTTE2004	Inspect and service engines
<b>Vehicle Body – Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR21512 Certificate II in Automotive Cylinder Head Reconditioning

### Modification History

Release	Comment
Release 1	Replaces AUR20705 Certificate II in Automotive Mechanical

## Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing and repairing engine cylinder heads of cars and heavy vehicles within an automotive service and repair business.

### Job roles and employment outcomes

The Certificate II in Automotive Cylinder Head Reconditioning is intended to prepare new employees or recognise and develop existing workers who are performing servicing and repair of cylinder heads of vehicles in an automotive service or repair business.

Job roles related to this qualification include:

- automotive engine cylinder head repair specialists
- automotive engine reconditioners

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service and repair functions in an automotive environment.

They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR31312 Certificate III in Automotive Engine Reconditioning, AUR30612 Certificate III in Light Vehicle Mechanical Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>Understanding and carrying out verbal instructions from supervisors and others</li> <li>Reading, understanding and completing workplace documentation, forms and records</li> <li>Sharing work-related information with other team members using industry terminology</li> <li>Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>Contributing positively to the work team environment</li> <li>Working effectively with others in a socially diverse environment</li> <li>Respecting and understanding the views of others</li> <li>Giving, receiving and acting upon feedback</li> <li>Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>Seeking information and assistance to solve problems outside own area of responsibility</li> <li>Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>Suggesting ideas for workplace improvement to supervisors and team members</li> <li>Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>Prioritising activities to achieve required outcomes</li> <li>Planning and organising appropriate equipment and materials</li> <li>Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>Following workplace safety requirements and other policies and procedures</li> <li>Completing known delegated tasks on time</li> <li>Selecting and using appropriate equipment, materials, processes</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	and procedures <ul style="list-style-type: none"><li>• Asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Identifying personal strengths and weaknesses</li><li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Appropriately selecting and using tools and equipment</li><li>• Recognising and reporting faulty equipment</li><li>• Using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **14 units** of competency, consisting of:

- **7 core units**

plus

- **7 elective units**, of which:

- up to **7** elective units may be chosen from the elective units list below
- up to **3** elective units may be drawn from a Certificate I qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit selected for this qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Manufacture</b>	
AURTTM3011	Recondition engine cylinder heads

### Elective units

Unit Code	Unit Title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	
AURTTC2001	Inspect and service cooling systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW3003	Carry out machining operations
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR21612 Certificate II in Automotive Driveline System Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20705 Certificate II in Automotive Mechanical

## Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing and repairing driveline and transmission components and systems of cars and heavy vehicles within an automotive service and repair business.

### Job roles and employment outcomes

The Certificate II in Automotive Driveline System Technology is intended to prepare new employees or recognise and develop existing workers who are performing servicing and repair of driveline and transmission components/systems of vehicles in an automotive service or repair business.

Job roles related to this qualification include:

- automotive driveline and transmission specialists.

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service and repair functions in an automotive environment.

They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR32512 Certificate III in Automotive Underbody Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>Understanding and carrying out verbal instructions from supervisors and others</li> <li>Reading, understanding and completing workplace documentation, forms and records</li> <li>Sharing work-related information with other team members using industry terminology</li> <li>Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>Contributing positively to the work team environment</li> <li>Working effectively with others in a socially diverse environment</li> <li>Respecting and understanding the views of others</li> <li>Giving, receiving and acting upon feedback</li> <li>Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>Seeking information and assistance to solve problems outside own area of responsibility</li> <li>Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>Suggesting ideas for workplace improvement to supervisors and team members</li> <li>Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>Prioritising activities to achieve required outcomes</li> <li>Planning and organising appropriate equipment and materials</li> <li>Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>Following workplace safety requirements and other policies and procedures</li> <li>Completing known delegated tasks on time</li> <li>Selecting and using appropriate equipment, materials, processes</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>and procedures</li><li>• Asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Identifying personal strengths and weaknesses</li><li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Appropriately selecting and using tools and equipment</li><li>• Recognising and reporting faulty equipment</li><li>• Using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **14 units** of competency, consisting of:

- **8 core units**

plus

- **6 elective units**, of which:

- up to **6** elective units may be taken from the elective units listed below
- up to **3** elective units may be drawn from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies
AURTTQ2003	Service final drive (driveline)
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX2002	Inspect and service transmissions (manual)
AURTTX2003	Inspect and service transmissions (automatic)

**Elective units**

Unit Code	Unit Title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	
AURTTC2001	Inspect and service cooling systems
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ2002	Remove and refit driveline components
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX2005	Inspect and service clutch systems

**Custom Content Section**

Not applicable.

## AUR21712 Certificate II in Automotive Exhaust System Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20705 Certificate II in Automotive Mechanical

## Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing and repairing exhaust components and systems of cars and heavy vehicles within an automotive service and repair business.

### Job roles and employment outcomes

The Certificate II in Automotive Exhaust System Technology is intended to prepare new employees or recognise and develop existing workers who are performing servicing and repair of exhaust components/systems of vehicles in an automotive service or repair business. Job roles related to this qualification include:

- automotive exhaust fitting specialists.

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service and repair functions in an automotive environment.

They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR32512 Certificate III in Automotive Underbody Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>Understanding and carrying out verbal instructions from supervisors and others</li> <li>Reading, understanding and completing workplace documentation, forms and records</li> <li>Sharing work-related information with other team members using industry terminology</li> <li>Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>Contributing positively to the work team environment</li> <li>Working effectively with others in a socially diverse environment</li> <li>Respecting and understanding the views of others</li> <li>Giving, receiving and acting upon feedback</li> <li>Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>Seeking information and assistance to solve problems outside own area of responsibility</li> <li>Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>Suggesting ideas for workplace improvement to supervisors and team members</li> <li>Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>Prioritising activities to achieve required outcomes</li> <li>Planning and organising appropriate equipment and materials</li> <li>Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>Following workplace safety requirements and other policies and procedures</li> <li>Completing known delegated tasks on time</li> <li>Selecting and using appropriate equipment, materials, processes</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	and procedures <ul style="list-style-type: none"><li>• Asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Identifying personal strengths and weaknesses</li><li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Appropriately selecting and using tools and equipment</li><li>• Recognising and reporting faulty equipment</li><li>• Using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **14 units** of competency, consisting of:

- **8 core units**

plus

- **6 elective units**, of which:
  - up to **6** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be drawn from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Fabrication</b>	
AURTTTS2001	Fabricate exhaust system and components
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2002	Repair exhaust system components
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	

Unit code	Unit title
AURVTW2003	Carry out gas metal arc welding procedures

**Elective units**

Unit Code	Unit Title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW3003	Carry out machining operations
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2001	Inspect and service emission control systems
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2002	Carry out brazing procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR21812 Certificate II in Automotive Steering and Suspension System Technology

### Modification History

Release	Comment
Release 1	Replaces AUR20705 Certificate II in Automotive Mechanical
Release 2	4 units added to the elective bank: AURHTD3004 Carry out wheel alignment operations (heavy vehicle) AURLTD3006 Carry out wheel alignment operations (light vehicle) AURTTD2001 Inspect steering systems AURTTD2003 Inspect suspension systems

## Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing steering and suspension components and systems of cars and heavy vehicles within an automotive service and repair business.

### Job roles and employment outcomes

The Certificate II in Automotive Steering and Suspension System Technology is intended to prepare new employees or recognise and develop existing workers who are performing servicing of steering and suspension components/systems of vehicles in an automotive service or repair business.

Job roles related to this qualification include:

- automotive steering and suspension specialists.

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service functions in an automotive environment.

They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes.

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR32512 Certificate III in Automotive Underbody Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

<b>EMPLOYABILITY SKILLS QUALIFICATION SUMMARY</b>	
The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.	
<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Understanding and carrying out verbal instructions from supervisors and others</li> <li>• Reading, understanding and completing workplace documentation, forms and records</li> <li>• Sharing work-related information with other team members using industry terminology</li> <li>• Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• Contributing positively to the work team environment</li> <li>• Working effectively with others in a socially diverse environment</li> <li>• Respecting and understanding the views of others</li> <li>• Giving, receiving and acting upon feedback</li> <li>• Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>• Seeking information and assistance to solve problems outside own area of responsibility</li> <li>• Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• Suggesting ideas for workplace improvement to supervisors and team members</li> <li>• Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>• Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>• Prioritising activities to achieve required outcomes</li> <li>• Planning and organising appropriate equipment and materials</li> <li>• Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• Following workplace safety requirements and other policies and procedures</li> <li>• Completing known delegated tasks on time</li> <li>• Selecting and using appropriate equipment, materials, processes</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	and procedures <ul style="list-style-type: none"> <li>• Asking for advice and assistance when appropriate</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>• Identifying personal strengths and weaknesses</li> <li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li> <li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• Appropriately selecting and using tools and equipment</li> <li>• Recognising and reporting faulty equipment</li> <li>• Using information and communication technology</li> </ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **12 units** of competency, consisting of:

- **8 core units** listed below

plus

- **4 elective units**, of which:
  - up to **4** elective units may be taken from the elective units listed below
  - up to **2** elective units may be drawn from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	
AURTTD2002	Inspect and service steering systems
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment

## Elective units

Unit Code	Unit Title
<b>Common - Sales</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Mechanical Heavy Vehicle – Technical – Steering and Suspension</b>	
AURHTD3004	Carry out wheel alignment operations (heavy vehicle)
<b>Mechanical Light Vehicle – Technical – Steering and Suspension</b>	
AURLTD3006	Carry out wheel alignment operations (light vehicle)
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2001	Select tyres and rims for specific applications (light)
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)
AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	
AURTTD2001	Inspect steering systems
AURTTD2003	Inspect suspension systems
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>	
AURTTJ2001	Balance wheels and tyres

## Custom Content Section

Not applicable.

## AUR21913 Certificate II in Automotive Tyre Servicing Technology

### Modification History

Release	Comment
Release 1	Replaces AUR21912 Certificate II in Automotive Tyre Servicing
Release 2	Updated imported elective units: RIICOM201D replaces RIICOM201A RIIWHS201D replaces RIIOHS201A RIIWHS204D replaces RIIOHS204A RIIQUA201D replaces RIIQUA201A RIIRIS201D replaces RIIRIS201B

### Description

This qualification covers the skills and knowledge required to perform a range of tasks related to servicing tyres of motorcycles, light vehicles, heavy vehicles, agricultural vehicles, earthmoving and off-the-road vehicles in an automotive service and repair business. *Job roles and employment outcomes*

The Certificate II in Automotive Tyre Servicing Technology prepares new employees or recognises and develops existing workers who service the following vehicle tyres in an automotive service or repair business:

- light vehicles
- heavy vehicles
- agricultural equipment.

Job roles related to this qualification include:

- automotive tyre fitter and repairer

## Pathways Information

### *Pathways into the qualification*

Credit will be granted towards this qualification to those who have completed AUR10112 Certificate I in Automotive Vocational Preparation or other relevant qualifications.

### *Pathways from the qualification*

Further training pathways from this qualification include AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR32512 Certificate III in Automotive Underbody Technology and AUR32613 Certificate III in Automotive Tyre Management, or other relevant qualifications

## Licensing/Regulatory Information

### *Licensing considerations*

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive body repair industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working in a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems that need priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise them</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive body repair industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability skill	Industry/enterprise requirements for this qualification include:
	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice and operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

### Packaging Rules

To be awarded this qualification, competency must be demonstrated in **14 units of competency, consisting of:**

- **4 core units**
- **10 elective units**, of which:
  - all units must be chosen in one of the specialist elective unit Groups A to D below, which relate to occupational streams
  - of the remaining units required to make up the elective unit total:
    - up to 7 units may be from the specialised elective or general elective units listed below
    - up to 3 units may be from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common – Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

### Elective units

Unit code	Unit title
<b>Specialist Elective Units</b>	
<b>Group A: Light Vehicle Tyres</b>	
<b>Mechanical - Light Vehicle – Technical – Wheels and Tyres</b>	
AURLTJ2001	Select tyres and rims for specific applications (light)

Unit code	Unit title
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)
AURLTJ2003	Remove, inspect and refit light vehicle wheel assemblies
<b>Group B: Heavy Vehicle Tyres</b>	
<b>Mechanical - Heavy Vehicle – Technical – Wheels and Tyres</b>	
AURHTJ2002	Select heavy vehicle tyres and rims for specific applications
AURHTJ2003	Remove, inspect and refit heavy vehicle wheel assemblies
AURHTJ2006	Remove, inspect, repair and fit tyres and tubes (heavy)
<b>Group C: Agricultural Tyres</b>	
<b>Mechanical - Heavy Vehicle – Technical – Wheels and Tyres</b>	
AURHTJ2002	Select heavy vehicle tyres and rims for specific applications
AURHTJ2003	Remove, inspect and refit heavy vehicle wheel assemblies
AURHTJ2004	Demount, inspect, repair and mount agricultural equipment tyres and tubes
<b>Group D: Earthmoving and Off-the-Road Tyres</b>	
<b>Mechanical – Mobile Plant – Technical – Wheels and Tyres</b>	
AURKTJ001	Remove, inspect and fit earthmoving and off-the-road tyres
AURKTJ002	Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies
AURKTJ005	Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications
AURKTJ006	Use earthmoving and off-the-road tyre handlers
<b>General Elective Units</b>	
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common – Foundation Skills</b>	

Unit code	Unit title
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2015	Inspect and service batteries
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA2004	Carry out servicing operations
<b>Mechanical Miscellaneous – Technical – Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>	
AURTTTC2001	Inspect and service cooling systems
<b>Mechanical Miscellaneous – Technical – Steering and Suspension</b>	
AURTTD2002	Inspect and service steering systems
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous – Technical – Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>	
AURTTF2001	Service petrol fuel systems
<b>Mechanical Miscellaneous – Technical – Wheels and Tyres</b>	
AURTTJ2001	Balance wheels and tyres
AURTTJ2002	Remove and refit wheel hubs and associated brake components
<b>Mechanical – Mobile Plant – Technical – Wheels and Tyres</b>	
AURKTJ003	Perform minor repairs to earthmoving and off-the-road tyres
<b>Imported Units</b>	

Unit code	Unit title
RIICOM201D	Communicate in the workplace
RIIQUA201D	Maintain and monitor site quality standards
RIIRIS201D	Conduct local risk control
RIIWHS201D	Work safely and follow WHS policies and procedures
RIIWHS204D	Work safely at heights
TLID3011A	Conduct specialised forklift operations
TLILIC2001A	Licence to operate a forklift truck

## Custom Content Section

Not applicable.

## AUR30112 Certificate III in Automotive Administration

### Modification History

Release	Comment
Release 1	Replaces AUR30105 Certificate III in Automotive Administration

## Description

### Job roles and employment outcomes

The Certificate III in Automotive Administration is intended to prepare new employees or recognise and develop existing workers who are performing as administrators in the automotive industry.

Job roles related to this qualification include:

- office administration
- sales administration
- warehousing and distribution administration
- bicycle administration
- marine administration
- outdoor power equipment administration
- motorsport administration
- vehicle servicing administration
- vehicle repair administration

### Application

This qualification is suitable for an Australian traineeship pathway.

## Pathways Information

### Pathways into the qualification

Credit will be granted towards this qualification to those who have completed AUR20112 Certificate II in Automotive Administration or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40112 Certificate IV in Automotive Management or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **18 units** of competency consisting of:

- **10 core units**

plus

- **8 elective units** of which:
  - up to **8** elective units may be chosen from the elective units listed below
  - up to **3** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Administration</b>	
AURAAA2001	Work in an automotive administration environment
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
AURACA3003	Build customer relations
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common - Information Technology</b>	
AURAKA2001	Use information technology systems
AURAKA3002	Adapt work processes to new technologies
<b>Common - Management, Leadership and Supervision</b>	
AURAMA3004	Maintain business image
<b>Common - Quality</b>	

Unit code	Unit title
AURAQA3003	Maintain quality systems
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace

**Elective units**

Unit code	Unit title
<b>Common - Sales and Marketing</b>	
AURACA3002	Establish customer requirements of a complex nature
<b>Common - Foundation Skills</b>	
AURAF2002	Read in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
AURAF2005	Write routine texts in an automotive workplace
<b>Common - Regulatory or Legal</b>	
AURALA3001	Determine legal aspects of an automotive service and repair contract
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Sales and Parts, Administration and Management - Administration</b>	
AURSAA2001	Process customer complaints
AURSAA2002	Maintain customer aftermarket relations
<b>Sales and Parts, Administration and Management - Sales and Marketing</b>	
AURSCA2005	Sell products
AURSCA2006	Promote products and services
<b>Sales and Parts, Administration and Management - Regulatory or Legal</b>	
AURSLA2001	Apply legal requirements relating to product sales

Unit code	Unit title
<b>Imported Units</b>	
BSBFIA303A	Process accounts payable and receivable
BSBINM202A	Handle mail
BSBITU305A	Conduct online transactions
TAEDEL301A	Provide work skill instruction

## Custom Content Section

Not applicable.

## AUR30212 Certificate III in Bicycle Workshop Operations

### Modification History

Release	Comment
Release 1	Replaces AUR30211 Certificate III in Bicycles

### Description

This qualification covers the skills and knowledge required to perform a broad range of mechanical tasks on a variety of bicycles in the bicycle retail, service and repair sector.

#### Job roles and employment outcomes

The Certificate III in Bicycle Workshop Operations is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the bicycle retail, service and repair industry. The work may also include tasks related to the operation of the business, retail sales and/or the supervision of others.

Employment outcomes targeted by this qualification include:

- bicycle repair technicians
- bicycle mechanics

#### Application

This qualification is suitable for an Australian Apprenticeship pathway.

### Pathways Information

Not applicable.

### Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

### Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the bicycle industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **28 units** of competency, consisting of:

- **16 core units**
- plus
- **12 elective units**, of which:
  - up to **12** elective units may be chosen from the elective units listed below
  - up to **5** elective units may be chosen from a Certificate II qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Bicycle - Sales and Marketing</b>	
AURBCA2001	Work in a retail bicycle environment
<b>Bicycle - Technical</b>	
AURBTA2004	Assemble box bicycles for retail sale
<b>Bicycle - Technical - Brakes</b>	
AURBTB2001	Service and repair bicycle mechanical braking systems
AURBTB2002	Service bicycle hydraulic braking systems
AURBTB3003	Repair bicycle hydraulic braking systems
<b>Bicycle - Technical - Steering and Suspension</b>	
AURBTD2001	Service bicycle steering systems
AURBTD2002	Service bicycle suspension systems

AURBTD3003	Repair and overhaul bicycle steering systems
<b>Bicycle - Technical - Wheels and Tyres</b>	
AURBTJ2002	Service bicycle wheels and hubs
AURBTJ3003	Design and build bicycle wheels
AURBTJ3004	Repair and overhaul bicycle wheels and hubs
<b>Bicycle - Technical - Driveline and Final Drives</b>	
AURBTQ2001	Service bicycle drivetrain systems
AURBTQ3002	Repair bicycle drivetrain systems
<b>Bicycle - Technical - Accessories</b>	
AURBTV2001	Fit and adjust bicycle accessories

**Elective units**

Unit code	Unit title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
AURAF2005	Write routine texts in an automotive workplace
<b>Common - Information Technology</b>	
AURAKA3002	Adapt work processes to new technologies
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others

AURAMA2002	Communicate business information
<b>Common - Quality</b>	
AURAQA2001	Contribute to quality work outcomes
AURAQA3002	Inspect technical quality of work
AURAQA3003	Maintain quality systems
<b>Bicycle - Sales and Marketing</b>	
AURBCA2002	Select and adjust bicycle to fit rider
<b>Bicycle - Health and Safety</b>	
AURBSA3001	Conduct cycling proficiency training
<b>Bicycle - Technical</b>	
AURBTA2003	Assemble bicycles
AURBTA3005	Restore bicycles
AURBTA3006	Identify and select components for custom bicycles
AURBTA3007	Provide mechanical support to cycling events
<b>Bicycle - Technical - Steering and Suspension</b>	
AURBTD3004	Repair and overhaul bicycle suspension systems
<b>Bicycle - Technical - Wheels and Tyres</b>	
AURBTJ2001	Remove, repair and fit bicycle tyres
<b>Bicycle - Technical - Tools and Equipment</b>	
AURBTK2001	Use and maintain specialised bicycle repair tools
<b>Bicycle - Technical - Electrical and Electronic</b>	
AURBTR3001	Service electric power assist bicycles
<b>Bicycle - Technical - Chassis and Frame</b>	
AURBTY3001	Service and repair bicycle frames
AURBTY4002	Design and build bicycle frames

AURBTY4003	Assess carbon fibre frames for repair
<b>Sales and Parts, Administration and Management - Administration</b>	
AURSAA2001	Process customer complaints
<b>Sales and Parts, Administration and Management - Sales and Marketing</b>	
AURSCA2002	Present stock and sales area
AURSCA2003	Apply sales procedures
AURSCA2005	Sell products
AURSCA2006	Promote products and services
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW2001	Carry out soft soldering techniques
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2002	Carry out brazing procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures
<b>Imported Units</b>	
BSBWOR202A	Organise and complete daily work activities
BSBWOR301B	Organise personal work priorities and development

MEM18002B	Use power tools/hand held operations
SIRXINV001A	Perform stock control procedures
SIRXINV002A	Maintain and order stock
TAEDEL301A	Provide work skill instruction
TLIA3039A	Receive and store stock

## Custom Content Section

Not applicable.

## AUR30312 Certificate III in Automotive Electrical Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30308 Certificate III in Automotive Electrical Technology

### Description

This qualification covers the skills and knowledge required to service, diagnose and repair electrical systems and components in vehicles in the automotive electrical service and repair industry.

#### Job roles and employment outcomes

The Certificate III in Automotive Electrical Technology prepares new employees or recognises and develops existing workers who service, diagnose and repair vehicle electrical and electronic systems and components.

Job roles related to this qualification include:

- automotive electrician
- automotive electrical technician
- automotive electrical diagnostic technician.

#### Application

This qualification is suitable for an Australian apprenticeship pathway.

### Pathways Information

#### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20412 Certificate II in Automotive Electrical Technology in this Training Package or other relevant qualifications.

#### Pathways from the qualification

Further training pathways from this qualification include AUR40612 Certificate IV in Automotive Electrical Technology or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive, service and repair industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information and ideas with workplace colleagues, including using automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice and operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• applying and operating electrical and electronic diagnostic test equipment effectively</li><li>• performance testing components, systems and equipment</li><li>• using a range of workplace tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• applying digital literacy skills when fault finding vehicle systems and components</li><li>• using business technology to collect, analyse and provide information in both written and verbal formats</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **32 units** of competency, consisting of:

- **20 core units**
- plus
- **12 elective units**, of which:
  - up to **12** elective units may be chosen from the elective units listed below
  - up to **6** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical – Technical – Tools and Equipment</b>	
AURETK2002	Use and maintain automotive electrical test equipment
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2007	Demonstrate knowledge of automotive electrical circuits and wiring systems
AURETR2009	Install, test and repair vehicle lighting and wiring systems
AURETR2010	Fabricate, test and repair wiring harnesses and looms
AURETR2012	Test and repair basic electrical circuits
AURETR2035	Demonstrate knowledge of petrol and diesel engine operation
AURETR3023	Diagnose and repair electronic spark ignition engine management systems
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
AURETR3025	Test, charge and replace batteries

Unit code	Unit title
AURETR3027	Install ancillary electronic control unit systems and components
AURETR3028	Diagnose and repair instruments and warning systems
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
AURETR3031	Diagnose and repair ignition systems
AURETR3032	Repair electrical systems
AURETR3043	Service and repair electronic body management systems
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA3018	Carry out diagnostic procedures

**Elective units**

Unit code	Unit title	Prerequisite
<b>Common – Foundation Skills</b>		
AURFA2003	Communicate effectively in an automotive workplace	
<b>Common – Tools and Equipment</b>		
AURAKA3002	Adapt work processes to new technologies	
<b>Common – Management, Leadership and Supervision</b>		
AURAMA2001	Work effectively with others	
AURAMA2002	Communicate business information	
<b>Common – Quality</b>		
AURAQA3002	Inspect technical quality of work	
AURAQA3003	Maintain quality systems	
<b>Common – Technical</b>		
AURATA3004	Provide technical guidance	

Unit code	Unit title	Prerequisite
AURATA3005	Estimate complex jobs	
<b>Electrical – Technical – Brakes</b>		
AURETB3001	Repair electric braking systems	
<b>Electrical – Technical – Hybrid Vehicle and Battery Electric Vehicle</b>		
AURETH3001	Depower battery electric vehicles	
AURETH3002	Service and maintain battery electric vehicles	AURETH3001
<b>Electrical – Technical – Electrical and Electronic</b>		
AURETR2005	Install, test and repair electrical security systems and components	
AURETR2008	Remove and replace electrical units and assemblies	
AURETR2011	Install and test basic ancillary electrical components	
AURETR2013	Inspect and service charging systems	
AURETR2014	Inspect and service starting systems	
AURETR2015	Inspect and service batteries	
AURETR2016	Read and apply vehicle wiring schematics and drawings	
AURETR2042	Remove, refit and test electrical componentry for operation following body repair activities	
AURETR3017	Overhaul charging system alternators	
AURETR3018	Overhaul starting motors	
AURETR3019	Inspect, service and repair AC electric motor drive systems	
AURETR3021	Inspect, service and repair electronic management, monitoring and tracking systems	
AURETR3022	Diagnose and repair vehicle dynamic control systems	
AURETR3026	Remove, replace and program electrical and electronic units and assemblies	

Unit code	Unit title	Prerequisite
AURETR3036	Service and repair electronically controlled suspension systems	
AURETR3044	Service and repair electronic drive management systems	
<b>Electrical – Technical – Air Conditioning and HVAC</b>		
AURETU2001	Install air conditioning systems	
AURETU2002	Recover vehicle refrigerants	
AURETU2003	Service air conditioning and HVAC systems	
AURETU3004	Diagnose and repair air conditioning and HVAC systems	
AURETU3005	Retrofit and modify air conditioning and HVAC systems	
AURETU4007	Overhaul air conditioning system components	
<b>Mechanical – Heavy Vehicle – Technical – Emission and Exhaust</b>		
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems	
<b>Mechanical – Light Vehicle – Technical – Brakes</b>		
AURLTB3003	Diagnose and repair light vehicle hydraulic braking systems	
<b>Mechanical – Light Vehicle – Technical – Steering and Suspension</b>		
AURLTD3004	Repair steering systems (light vehicle)	
AURLTD3005	Repair suspension systems (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Engines</b>		
AURLTE2001	Remove and install light vehicle engine assemblies	
AURLTE3002	Repair engines and associated engine components (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Fuel Systems</b>		
AURLTF3001	Diagnose and repair mechanical fuel injection systems	
<b>Outdoor Power Equipment – Technical – Electrical and Electronic</b>		

Unit code	Unit title	Prerequisite
AURPTR2002	Test and service outdoor electric powered equipment	
<b>Marine – Technical – Engines</b>		
AURRTE3005	Diagnose and repair marine electrical systems and components	
<b>Marine – Technical – Electrical and Electronic</b>		
AURRTR3002	Install marine electronic systems and components	
AURRTR3003	Test, diagnose and repair marine electronic systems and components	
AURRTR3004	Install marine electrical systems and components	
<b>Mechanical Miscellaneous – Technical</b>		
AURTTA2004	Carry out servicing operations	
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives	
AURTTA3017	Carry out vehicle safety and roadworthy inspections	
AURTTA3019	Carry out advanced diagnostic procedures	
AURTTA4021	Carry out diagnosis of complex system faults	
<b>Mechanical Miscellaneous – Technical – Brakes</b>		
AURTTB2001	Inspect and service braking systems	
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>		
AURTTC3003	Diagnose and repair cooling systems	
<b>Mechanical Miscellaneous – Technical – Engines</b>		
AURTTE2004	Inspect and service engines	
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>		
AURTTF2001	Service petrol fuel systems	
AURTTF3004	Repair diesel fuel injection systems	

Unit code	Unit title	Prerequisite
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>		
AURTTK2002	Use and maintain workplace tools and equipment	
<b>Mechanical Miscellaneous – Technical – Alternative Fuels</b>		
AURTTL3010	Install LPG, CNG and LNG electrical control equipment	
<b>Mechanical Miscellaneous – Technical – Welding, Grinding, Machining and Soldering</b>		
AURTTW2001	Carry out soft soldering techniques	
<b>Mechanical Miscellaneous – Technical – Emission and Exhaust</b>		
AURTTZ2002	Repair exhaust system components	
<b>Vehicle Body – Technical</b>		
AURVTA3002	Remove and replace supplementary restraint systems	
AURVTA3004	Inspect vehicle systems and determine preferred repair action	
<b>Vehicle Body – Technical – Trimming and Upholstery</b>		
AURVTT2003	Remove and replace vehicle interior trim components	
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>		
AURVTW2001	Carry out manual metal arc welding procedures	
AURVTW2002	Carry out brazing procedures	
AURVTW2003	Carry out gas metal arc welding procedures	
AURVTW2004	Carry out gas tungsten arc welding procedures	
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures	
<b>Imported Units</b>		
BSBINN301A	Promote innovation in a team environment	
BSBWHS301A	Maintain workplace safety	
TAEDEL301A	Provide work skill instruction	

## Custom Content Section

Not applicable.

## AUR30412 Certificate III in Agricultural Mechanical Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30405 Certificate III in Automotive Mechanical Technology

## Description

This qualification covers the skills and knowledge required to perform a broad range of tasks on a variety of agricultural vehicles.

### Job roles and employment outcomes

The Certificate III in Agricultural Mechanical Technology is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the agricultural vehicle and equipment service and repair sector.

Employment outcomes targeted by this qualification include:

- agricultural mechanical technicians

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **36 units** of competency, comprising of:

- **24 core units**

plus

- **12 elective units**, of which:

- up to **12** elective units may be chosen from the elective units listed below
- up to **6** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3025	Test, charge and replace batteries
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
<b>Mechanical - Heavy Vehicle - Technical - Steering and Suspension</b>	
AURHTD3002	Repair steering systems (heavy vehicle)

Unit code	Unit title
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>	
AURHTE3002	Repair engines and associated engine components (heavy vehicle)
<b>Mechanical - Heavy Vehicle - Technical - Driveline and Final Drives</b>	
AURHTQ3002	Repair final drive assemblies (heavy vehicle)
AURHTQ3003	Repair final drive - driveline (heavy vehicle)
<b>Mechanical - Mobile Plant- Technical - Brakes</b>	
AURKTB3001	Diagnose and repair mobile plant braking systems
<b>Mechanical - Mobile Plant- Technical - Transmission</b>	
AURKTX3001	Diagnose and repair powershift transmissions
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA3013	Repair hydraulic systems
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	
AURTTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTF2002	Service diesel fuel injection systems
AURTTF3004	Repair diesel fuel injection systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	

Unit code	Unit title
AURTTK2002	Use and maintain workplace tools and equipment

**Elective units**

Unit code	Unit title
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
<b>Electrical - Technical - Air conditioning and HVAC</b>	
AURETU2003	Service air conditioning and HVAC systems
AURETU3004	Diagnose and repair air conditioning and HVAC systems
AURETU3005	Retrofit and modify air conditioning and HVAC systems
<b>Mechanical - Heavy Vehicle - Technical - Steering and Suspension</b>	
AURHTD3003	Repair suspension systems (heavy vehicle)
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>	
AURHTE2001	Remove and install heavy vehicle engine assemblies
<b>Mechanical - Heavy Vehicle - Technical - Wheels and Tyres</b>	
AURHTJ2003	Remove, inspect and refit heavy vehicle wheel assemblies
<b>Mechanical - Heavy Vehicle - Technical - Transmission</b>	
AURHTX3001	Repair transmissions - manual (heavy vehicle)
AURHTX3004	Diagnose and repair heavy vehicle clutch systems
<b>Mechanical - Heavy Vehicle - Technical - Emission and Exhaust</b>	
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems
<b>Mechanical - Mobile Plant- Technical</b>	
AURKTA3001	Synchronise plant and equipment

Unit code	Unit title
AURKTA3002	Inspect, service and repair harvesting equipment
AURKTA3003	Inspect, service and repair crop planting and seeding equipment
AURKTA3004	Inspect, service and repair spraying and spreading equipment
AURKTA3005	Inspect, service and repair tracked type drive and support systems
<b>Mechanical - Mobile Plant- Technical - Driveline and Final Drives</b>	
AURKTQ3001	Diagnose and repair mobile plant final drive assemblies
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2006	Service hydraulic systems
AURTTA2007	Inspect, service and repair pneumatic systems
AURTTA3011	Install hydraulic systems to specified applications
AURTTA3012	Manufacture and install fluid power hose assemblies
AURTTA3014	Assemble and install pneumatic systems and components
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2004	Inspect and service air braking systems
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	
AURTTD2002	Inspect and service steering systems
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous - Technical -Fuel Systems</b>	
AURTTF3005	Inspect and repair engine forced induction systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies
AURTTQ2003	Service final drive (driveline)

Unit code	Unit title
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX2002	Inspect and service transmissions (manual)
AURTTX2004	Service transmissions (hydrostatic)
AURTTX3006	Repair transmissions (hydrostatic)
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2002	Repair exhaust system components
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR30612 Certificate III in Light Vehicle Mechanical Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30405 Certificate III in Automotive Mechanical Technology

## Description

This qualification covers the skills and knowledge required to perform a broad range of tasks on a variety of light vehicles in the automotive service and repair industry.

### Job roles and employment outcomes

The Certificate III in Light Vehicle Mechanical Technology prepares new employees or recognises and develops existing workers performing mechanical work in the automotive light vehicle service and repair industry.

Job roles related to this qualification include:

- light vehicle mechanical technician.

### Application

This qualification is suitable for an Australian apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information and ideas with workplace colleagues, including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice and operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **36 units** of competency, consisting of:

- **20 core units**

plus

- **16 elective units**, of which:
  - up to **16** elective units may be chosen from the elective units listed below
  - up to **6** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3023	Diagnose and repair electronic spark ignition engine management systems
AURETR3025	Test, charge and replace batteries
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
AURETR3031	Diagnose and repair ignition systems
<b>Mechanical – Light Vehicle – Technical – Emission and Exhaust</b>	
AURLTZ3001	Diagnose and repair light vehicle emission control systems
<b>Mechanical – Light Vehicle – Technical – Brakes</b>	
AURLTB3003	Diagnose and repair light vehicle hydraulic braking systems

Unit code	Unit title
<b>Mechanical – Light Vehicle – Technical – Steering and Suspension</b>	
AURLTD3004	Repair steering systems (light vehicle)
AURLTD3005	Repair suspension systems (light vehicle)
<b>Mechanical – Light Vehicle – Technical – Engines</b>	
AURLTE3002	Repair engines and associated engine components (light vehicle)
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous – Technical – Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>	
AURTTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous – Technical – Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>	
AURTTF2001	Service petrol fuel systems
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

**Elective units**

Unit code	Unit title	Prerequisites
<b>Common – Sales and Marketing</b>		
AURACA2001	Establish relations with customers	
<b>Common – Foundation Skills</b>		

Unit code	Unit title	Prerequisites
AURAF2003	Communicate effectively in an automotive workplace	
<b>Electrical – Technical – Steering and Suspension</b>		
AURETD3001	Service and repair electronically controlled steering systems	
<b>Electrical – Technical – Hybrid Vehicle and Battery Electric Vehicle</b>		
AURETH3001	Depower battery electric vehicles	
AURETH3002	Service and maintain battery electric vehicles	AURETH3001
<b>Electrical – Technical – Body</b>		
AURETR3043	Service and repair electronic body management systems	
<b>Electrical – Technical – Electrical and Electronic</b>		
AURETR2005	Install, test and repair electrical security systems and components	
AURETR2010	Fabricate, test and repair wiring harnesses and looms	
AURETR2011	Install and test basic ancillary electrical components	
AURETR3020	Repair electronic systems	
AURETR3022	Diagnose and repair vehicle dynamic control systems	
AURETR3024	Diagnose and repair electronic compression ignition engine management systems	
AURETR3028	Diagnose and repair instruments and warning systems	
AURETR3032	Repair electrical systems	
AURETR3036	Service and repair electronically controlled suspension systems	
AURETR3044	Service and repair electronic drive management systems	
<b>Electrical – Technical – Air Conditioning and HVAC</b>		
AURETU2003	Service air conditioning and HVAC systems	
AURETU3004	Diagnose and repair air conditioning and HVAC systems	

Unit code	Unit title	Prerequisites
AURETU3005	Retrofit and modify air conditioning and HVAC systems	
<b>Mechanical – Light Vehicle – Technical – Steering and Suspension</b>		
AURLTD3006	Carry out wheel alignment operations (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Engines</b>		
AURLTE2001	Remove and install light vehicle engine assemblies	
<b>Mechanical – Light Vehicle – Technical – Fuel Systems</b>		
AURLTF3001	Diagnose and repair mechanical fuel injection systems	
<b>Mechanical – Light Vehicle – Technical – Wheels and Tyres</b>		
AURLTJ2001	Select tyres and rims for specific applications (light)	
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)	
AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies	
<b>Mechanical – Light Vehicle – Technical – Driveline and Final Drives</b>		
AURLTQ3001	Repair final drive assemblies (light vehicle)	
AURLTQ3002	Repair final drive – driveline (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Transmission</b>		
AURLTX3001	Repair transmissions – manual (light vehicle)	
AURLTX3002	Repair transmissions – automatic (light vehicle)	
AURLTX3003	Diagnose and repair light vehicle clutch systems	
<b>Mechanical Miscellaneous – Technical</b>		
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives	
AURTTA2009	Carry out pre-repair operations (mechanical)	
AURTTA3017	Carry out vehicle safety and roadworthy inspections	
AURTTA3019	Carry out advanced diagnostic procedures	

Unit code	Unit title	Prerequisites
<b>Mechanical Miscellaneous – Technical – Brakes</b>		
AURTTB2003	Machine brake drums and brake disc rotors	
AURTTB3005	Assemble and fit braking systems and components	
AURTTB3006	Inspect, service and repair auxiliary braking systems	
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>		
AURTTC2001	Inspect and service cooling systems	
<b>Mechanical Miscellaneous – Technical – Steering and Suspension</b>		
AURTTD2002	Inspect and service steering systems	
AURTTD2004	Inspect and service suspension systems	
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>		
AURTTF2002	Service diesel fuel injection systems	
AURTTF3004	Repair diesel fuel injection systems	
AURTTF3005	Inspect and repair engine forced induction systems	
AURTTF3006	Diagnose and repair petrol carburettor systems	
<b>Mechanical Miscellaneous – Technical – Wheels and Tyres</b>		
AURTTJ2001	Balance wheels and tyres	
<b>Mechanical Miscellaneous – Technical – Measuring Equipment</b>		
AURTTK2001	Use and maintain measuring equipment in an automotive workplace	
<b>Mechanical Miscellaneous – Technical – Alternative Fuels</b>		
AURTTL3007	Service LPG fuel systems	
AURTTL3008	Diagnose and repair LPG fuel systems	
<b>Mechanical Miscellaneous – Technical – Driveline and Final Drives</b>		
AURTTQ2001	Service final drive assemblies	

Unit code	Unit title	Prerequisites
AURTTQ2003	Service final drive (driveline)	
<b>Mechanical Miscellaneous – Technical – Welding, Grinding, Machining and Soldering</b>		
AURTTW2001	Carry out soft soldering techniques	
<b>Mechanical Miscellaneous – Technical – Transmission</b>		
AURTTX2002	Inspect and service transmissions (manual)	
AURTTX2003	Inspect and service transmissions (automatic)	
<b>Mechanical Miscellaneous – Technical – Emission and Exhaust</b>		
AURTTZ2002	Repair exhaust system components	
<b>Vehicle Body – Technical</b>		
AURVTA3004	Inspect vehicle systems and determine preferred repair action	
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>		
AURVTW2001	Carry out manual metal arc welding procedures	
AURVTW2002	Carry out brazing procedures	
AURVTW2003	Carry out gas metal arc welding procedures	
AURVTW2004	Carry out gas tungsten arc welding procedures	
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures	

## Custom Content Section

Not applicable.

## AUR30713 Certificate III in Outdoor Power Equipment Technology

### Modification History

Not applicable.

### Description

This qualification covers the skills and knowledge required to perform a range of service and repair tasks on outdoor power equipment. It is suitable for entry into the outdoor power equipment mechanical service and repair industry.

#### ***Job roles and employment outcomes***

The Certificate III in Outdoor Power Equipment Technology prepares new employees, and develops existing workers, to perform service and repair roles in the outdoor power equipment mechanical service and repair industry.

Job roles related to this qualification include:

- outdoor power equipment technicians
- repair technicians.

The work may also include tasks related to operating a business and/or supervising others.

#### ***Application***

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### *Pathways into the qualification*

Credit will be granted towards this qualification to those who have completed AUR20812 Certificate II in Outdoor Power Equipment Technology in this Training Package, or other relevant qualifications.

### *Pathways from the qualification*

Further training pathways from this qualification include AUR40112 Certificate IV in Automotive Management, AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling, and other relevant qualifications.

## Licensing/Regulatory Information

### *Licensing considerations*

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the outdoor power equipment industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification
<b>Communication</b>	<ul style="list-style-type: none"><li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li><li>completing workplace reports</li><li>using and contributing to workplace procedures</li><li>maintaining workplace records</li><li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li><li>communicating with people who speak languages other than English and in a cross-cultural context</li></ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the outdoor power equipment industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification
	<ul style="list-style-type: none"> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working in a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking appropriate action</li> <li>determining problems that need priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance, as required, to solve problems</li> <li>using a range of problem-solving techniques</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise them</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> <li>recognising limitations and seeking timely advice</li> <li>planning own work requirements, setting own work program, and managing time to ensure tasks are completed on time</li> <li>following workplace documentation, such as codes of practice and operating procedures</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>asking questions to gain information</li> <li>identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li> <li>participating in self-improvement activities</li> <li>participating in development of workplace continuous</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the outdoor power equipment industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification
	improvement strategies • helping others develop competency
<b>Technology</b>	• operating and adjusting outdoor power equipment components, systems and equipment • setting up equipment and work area • selecting and using appropriate tools, equipment and materials • operating diagnostic and test equipment • applying knowledge of operating principles of components and systems • using business technology to collect, analyse and provide information

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**Packaging Rules****Packaging Rules**

**To be awarded this qualification, competency must be demonstrated in 36 units of competency, consisting of:**

- **15 core units**
- **21 elective units**, of which:
- **up to 21 units may be chosen from the elective units listed below**
- **up to 6 units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.**

**Core units**

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Health and Safety</b>	

Unit code	Unit title
AURASA2002	Apply safe working practices in an automotive workplace
<b>Outdoor Power Equipment - Technical</b>	
AURPTA2003	Service and repair rotary cutting systems
AURPTA2005	Service and repair chainsaw cutting systems
AURPTA2006	Service line trimming systems and components
AURPTA2007	Service and repair post-boring systems
AURPTA2008	Service and repair post-hole digging systems
AURPTA2009	Service and repair reciprocating cutting systems
AURPTA2010	Service pumping systems
AURPTA3011	Repair pumping systems
<b>Outdoor Power Equipment - Technical - Engines</b>	
AURPTE2002	Service engines and engine components (outdoor power equipment)
AURPTE3003	Repair engines and engine components (outdoor power equipment)
AURPTE4004	Overhaul engines and engine components (outdoor power equipment)
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Elective units</b>	
Unit code	Unit title
<b>Common - Sales and Marketing</b>	
AURACA3002	Establish customer requirements of a complex nature
AURACA3003	Build customer relations
<b>Common - Foundation Skills</b>	

Unit code	Unit title
AURAF2003	Communicate effectively in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
AURAMA2002	Communicate business information
<b>Common - Technical</b>	
AURATA2001	Identify basic automotive faults using troubleshooting processes
<b>Electrical - Technical - Tools and Equipment</b>	
AURETK2002	Use and maintain automotive electrical test equipment
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2009	Install, test and repair vehicle lighting and wiring systems
AURETR2012	Test and repair basic electrical circuits
AURETR2015	Inspect and service batteries
AURETR3023	Diagnose and repair electronic spark ignition engine management systems
AURETR3025	Test, charge and replace batteries
AURETR3026	Remove, replace and program electrical and electronic units and assemblies
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
AURETR3031	Diagnose and repair ignition systems
AURETR3032	Repair electrical systems
<b>Mechanical - Heavy Vehicle - Technical - Transmission</b>	
AURHTX3004	Diagnose and repair heavy vehicle clutch systems
<b>Mechanical - Mobile Plant - Technical</b>	

Unit code	Unit title
AURKTA3005	Inspect, service and repair tracked type drive and support systems
<b>Mechanical - Light Vehicle - Technical - Steering and Suspensions</b>	
AURLTD3004	Repair steering systems (light vehicle)
<b>Mechanical - Light Vehicle - Technical - Engine</b>	
AURLTE3002	Repair engines and associated engine components (light vehicle)
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)
<b>Mechanical - Light Vehicle - Technical - Transmission</b>	
AURLTX3001	Repair transmissions - manual (light vehicle)
<b>Mechanical - Light Vehicle - Technical – Emission and Exhaust</b>	
AURLTZ3001	Diagnose and repair light vehicle emission control systems
<b>Outdoor Power Equipment - Technical</b>	
AURPTA2004	Service and repair drum cutting systems
<b>Outdoor Power Equipment - Technical - Electrical and Electronic</b>	
AURPTR2002	Test and service outdoor electric powered equipment
AURPTR3001	Test and service 240V portable generators
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2006	Service hydraulic systems
AURTTA3013	Repair hydraulic systems
AURTTA4021	Carry out diagnosis of complex system faults
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	
AURTTC2001	Inspect and service cooling systems

Unit code	Unit title
AUR TTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	
AUR TTD2002	Inspect and service steering systems
AUR TTD2003	Inspect suspension systems
AUR TTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AUR TTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AUR TTF3004	Repair diesel fuel injection systems
AUR TTF3005	Inspect and repair engine forced induction systems
AUR TTF3006	Diagnose and repair petrol carburettor systems
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>	
AUR TTJ2002	Remove and refit wheel hubs and associated brake components
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AUR TTK2001	Use and maintain measuring equipment in an automotive workplace
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AUR TTQ2001	Service final drive assemblies
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AUR TTX2004	Service transmissions (hydrostatic)
AUR TTX3006	Repair transmissions (hydrostatic)
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AUR TTZ2002	Repair exhaust system components
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AUR VTW2001	Carry out manual metal arc welding procedures

Unit code	Unit title
AURVTW2002	Carry out brazing procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures
<b>Imported Units</b>	
MEM18002B	Use power tools/hand held operations
TLID1001A	Shift materials safely using manual handling methods
TLID2004A	Load and unload goods/cargo
TLID2013A	Move materials mechanically using automated equipment

## Custom Content Section

Not applicable.

## AUR30812 Certificate III in Motorcycle Mechanical Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30405 Certificate III in Automotive Mechanical Technology

## Description

This qualification covers the skills and knowledge required to perform a broad range of tasks on a variety of motorcycles within the automotive service and repair industry.

### Job roles and employment outcomes

The Certificate III in Motorcycle Mechanical Technology prepares new employees or recognises and develops existing workers performing mechanical work in the automotive motorcycle service and repair industry.

Job roles related to this qualification include:

- automotive motorcycle repair technician.

### Application

This qualification is suitable for an Australian apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information and ideas with workplace colleagues, including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **36 units** of competency, consisting of:

- **24 core units**
- plus
- **12 elective units**, of which:
  - up to **12** elective units may be chosen from the elective units listed below
  - up to **6** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3023	Diagnose and repair electronic spark ignition engine management systems
AURETR3025	Test, charge and replace batteries
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
AURETR3031	Diagnose and repair ignition systems
<b>Mechanical – Motorcycle – Technical – Brakes</b>	
AURJTB3001	Diagnose and repair motorcycle braking systems
<b>Mechanical – Motorcycle – Technical – Steering and Suspension</b>	
AURJTD3003	Diagnose and repair motorcycle suspension systems
AURJTD3004	Diagnose and repair motorcycle steering systems

Unit code	Unit title
<b>Mechanical – Motorcycle – Technical – Engines</b>	
AURJTE3001	Diagnose and repair motorcycle engines
<b>Mechanical – Motorcycle – Technical – Driveline and Final Drives</b>	
AURJTD3002	Diagnose and repair motorcycle driveline systems
<b>Mechanical – Motorcycle – Technical – Transmission</b>	
AURJTX3001	Diagnose and repair motorcycle clutch systems
AURJTX3002	Diagnose and repair motorcycle manual transmissions
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous – Technical – Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>	
AURTTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous – Technical – Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>	
AURTTF2001	Service petrol fuel systems
AURTTF3006	Diagnose and repair petrol carburettor systems
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous – Technical – Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies
AURTTQ2003	Service final drive (driveline)

### Elective units

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common – Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR3022	Diagnose and repair vehicle dynamic control systems
<b>Mechanical – Motorcycle – Technical – Wheels and Tyres</b>	
AURJTJ2001	Remove, inspect and fit motorcycle wheel assemblies
<b>Mechanical – Motorcycle – Technical – Transmission</b>	
AURJTX3003	Diagnose and repair motorcycle automatic transmissions
<b>Mechanical – Light Vehicle – Technical – Transmission</b>	
AURLTD3004	Repair steering systems (light vehicle)
AURLTD3005	Repair suspension systems (light vehicle)
<b>Mechanical – Light Vehicle – Technical – Wheels and Tyres</b>	
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)
<b>Mechanical – Light Vehicle – Technical – Driveline and Final Drives</b>	
AURLTQ3001	Repair final drive assemblies (light vehicle)
AURLTQ3002	Repair final drive – driveline (light vehicle)
<b>Mechanical – Light Vehicle – Technical – Emission and Exhaust</b>	
AURLTZ3001	Diagnose and repair light vehicle emission control systems
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2006	Promote products and services
<b>Mechanical Miscellaneous – Technical</b>	

Unit code	Unit title
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>	
AURTTC2001	Inspect and service cooling systems
<b>Mechanical Miscellaneous – Technical – Emission and Exhaust</b>	
AURTTZ2002	Repair exhaust system components
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR30912 Certificate III in Motorsport Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30911 Certificate III in Motorsport
Release 2	Prerequisites updated for AURMKA4001 Two new units added to elective bank: AURLTX3003 AURTTF3005

## Description

This qualification covers the skills and knowledge required to service and repair the mechanical parts, transmission and suspension systems of vehicles within the motorsport sector. It is suitable for entry into the automotive motorsport service and repair sector.

### Job roles and employment outcomes

The Certificate III in Motorsport Technology offers training to service and repair the mechanical components of motorsport vehicles, and to operate sustainably and safely within a motorsport environment.

Employment outcomes targeted by this qualification include:

- a number three mechanic within a V8 Supercar team
- a vehicle service and repair technician within a motorsport race team
- service/pit crew race team member
- an opportunity to branch into different roles within a race team which may include data technician, engine technician, driveline technician, machinist, fabricator or promotional activities.

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing mechanical technology service and repair tasks in the motorsport sector of the automotive industry.

They would be expected to perform a range of skilled operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. Some complex and non-routine activities involving individual responsibility or autonomy and/or collaboration with others may be expected.

Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship arrangement.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR21012 Certificate II in Motorsport Technology, or other relevant qualifications. Credit for this qualification may also include units contained within relevant skill sets.

### Pathways from the qualification

Further training pathways from this qualification include AUR40312 Certificate IV in Motorsport Technology, or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills for this qualification as identified by the motorsport industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information to others (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>communicating ideas and information with workplace colleagues</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions, and responding to requests for information</li> <li>communicating with people who speak languages other than English and in a cross cultural context</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance, as required, to solve problems</li> <li>using a range of problem solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills for this qualification as identified by the motorsport industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• prioritising actions to achieve required outcomes</li> <li>• planning own work requirements</li> <li>• allocating resources to workplace tasks and requirements</li> <li>• identifying risk factors and take action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• selecting and using appropriate equipment, materials, processes and procedures</li> <li>• recognising limitations and seek timely advice</li> <li>• planning own work requirements, set own work program and manage time to ensure tasks are done on time</li> <li>• following workplace documentation, such as codes of practice or operating procedures</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>• asking questions to gain information</li> <li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li> <li>• participating in self-improvement activities</li> <li>• participating in development of workplace continuous improvement strategies</li> <li>• helping others develop competency</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• selecting and using appropriate equipment and materials</li> <li>• operating diagnostic and test equipment</li> <li>• performance testing of components, systems and equipment</li> <li>• using tools and equipment efficiently and safely</li> <li>• storing and caring for components, parts, tools, test equipment and support equipment</li> </ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **36 units** of competency, consisting of:

- **21 core units**

plus

- **15 elective units**, of which:

- up to **15** elective units may be chosen from the elective units listed below
- up to **6** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title	Prerequisites
<b>Common -Environment</b>		
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry	
<b>Electrical - Technical - Electrical and Electronic</b>		
AURETR3023	Diagnose and repair electronic spark ignition engine management systems	
<b>Mechanical - Light Vehicle - Technical - Steering and Suspension</b>		
AURLTD3006	Carry out wheel alignment operations (light vehicle)	
<b>Motorsport - Support and Logistics</b>		
AURMBA3002	Load and unload a competition vehicle and support equipment	
<b>Motorsport - Officiating</b>		
AURMDA2002	Assist with motorsport officiating duties	
<b>Motorsport - Management, Leadership and Supervision</b>		
AURMMA2001	Operate in a motorsport environment	
AURMMA3007	Follow motorsport event and team safety requirements	
AURMMA3008	Coordinate operations of a motorsport team	

Unit code	Unit title	Prerequisites
<b>Motorsport - Technical</b>		
AURMTA3002	Assemble and prepare a competition vehicle	AURLTD3006 AURMTA3006 AURMTA3007
AURMTA3004	Perform competition vehicle preparation procedures at an event	AURMTA3002
AURMTA3005	Perform pit lane and service area operations	
AURMTA3006	Perform torquing and fastening	
AURMTA3007	Conduct non-destructive testing	
AURMTA3009	Collect and log motorsport data	
<b>Motorsport - Technical - Fabrication</b>		
AURMTS3001	Construct hose and pipe assemblies for competition vehicles	
<b>Mechanical Miscellaneous - Technical</b>		
AURTTA3018	Carry out diagnostic procedures	
<b>Mechanical Miscellaneous - Technical - Brakes</b>		
AURTTB2001	Inspect and service braking systems	
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>		
AURTTD2004	Inspect and service suspension systems	
<b>Mechanical Miscellaneous - Technical - Engines</b>		
AURTTE2004	Inspect and service engines	
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>		
AURTTQ2003	Service final drive (driveline)	
<b>Mechanical Miscellaneous - Technical - Transmission</b>		
AURTTX2002	Inspect and service transmissions (manual)	

**Elective units**

Unit code	Unit title	Prerequisites
<b>Common - Health and Safety</b>		
AURASA2002	Apply safe working practices in an automotive workplace	
<b>Common - Technical</b>		
AURATA2002	Read and interpret engineering drawings	
AURATA2003	Produce drawings from design concepts	
<b>Electrical - Technical - Steering and Suspension</b>		
AURETD3001	Service and repair electronically controlled steering systems	
<b>Electrical - Technical - Electrical and Electronic</b>		
AURETR2006	Carry out soldering of electrical wiring and circuits	
AURETR2010	Fabricate, test and repair wiring harnesses and looms	
AURETR2012	Test and repair basic electrical circuits	
AURETR3017	Overhaul charging system alternators	
AURETR3018	Overhaul starting motors	
AURETR3020	Repair electronic systems	
AURETR3022	Diagnose and repair vehicle dynamic control systems	
AURETR3024	Diagnose and repair electronic compression ignition engine management systems	
AURETR3025	Test, charge and replace batteries	
AURETR3026	Remove, replace and program electrical and electronic units and assemblies	
AURETR3028	Diagnose and repair instruments and warning systems	
AURETR3029	Diagnose and repair charging systems	
AURETR3030	Diagnose and repair starting systems	

Unit code	Unit title	Prerequisites
AURETR3031	Diagnose and repair ignition systems	
AURETR3032	Repair electrical systems	
AURETR3036	Service and repair electronically controlled suspension systems	
AURETR3043	Service and repair electronic body management systems	
AURETR3044	Service and repair electronic drive management systems	
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>		
AURHTE3002	Repair engines and associated engine components (heavy vehicle)	
<b>Mechanical - Heavy Vehicle - Technical - Transmission</b>		
AURHTX3004	Diagnose and repair heavy vehicle clutch systems	
<b>Mechanical - Motorcycle - Technical - Steering and Suspension</b>		
AURJTD3003	Diagnose and repair motorcycle suspension systems	
AURJTD3004	Diagnose and repair motorcycle steering systems	
<b>Mechanical - Motorcycle - Technical - Chassis and Frame</b>		
AURJTY3001	Repair and align motorcycle frames	
<b>Mechanical - Light Vehicle - Technical - Brakes</b>		
AURLTB3003	Diagnose and repair light vehicle hydraulic braking systems	
AURLTB4001	Overhaul braking system components (light)	
<b>Mechanical - Light Vehicle - Technical - Steering and Suspension</b>		
AURLTD3004	Repair steering systems (light vehicle)	
AURLTD3005	Repair suspension systems (light vehicle)	
<b>Mechanical - Light Vehicle - Technical - Engines</b>		
AURLTE3002	Repair engines and associated engine components (light vehicle)	

Unit code	Unit title	Prerequisites
<b>Mechanical - Light Vehicle - Technical – Fuel Systems</b>		
AURLTF3001	Diagnose and repair mechanical fuel injection systems	
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>		
AURLTJ2001	Select tyres and rims for specific applications (light)	
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)	
AURLTJ2003	Remove, inspect and refit light vehicle wheel assemblies	
<b>Mechanical - Light Vehicle - Technical - Driveline and Final Drives</b>		
AURLTQ3001	Repair final drive assemblies (light vehicle)	
AURLTQ3002	Repair final drive - driveline (light vehicle)	
<b>Mechanical - Light Vehicle - Technical - Transmission</b>		
AURLTX3001	Repair transmissions - manual (light vehicle)	
AURLTX3002	Repair transmissions - automatic (light vehicle)	
AURLTX3003	Diagnose and repair light vehicle clutch systems	
<b>Motorsport – Support and Logistics</b>		
AURMBA2001	Transport a light competition vehicle and support equipment	
<b>Motorsport - Officiating</b>		
AURMDA2001	Develop and update motorsport industry knowledge	
AURMDA3004	Recover a motorsport vehicle	
AURMDA3005	Act as a marshal in a motorsport event	
AURMDA3006	Communicate using flags and signals in a motorsport event	
AURMDA3007	Act as a steward in a motorsport event	
<b>Motorsport</b>		
AURMGA2001	Set up and dismantle temporary work location and	

Unit code	Unit title	Prerequisites
	equipment	
AURMGA4002	Manage personal presentation and development	
<b>Motorsport - Technology (Computing)</b>		
AURMKA4001	Manage motorsport data	AURETR2012 AURMTA3009 MEM30012A
<b>Motorsport - Regulatory or Legal</b>		
AURMLA2001	Comply with motorsport rules and regulations when officiating	
AURMLA3002	Monitor compliance with motorsport rules and regulations	
AURMLA3003	Inspect motorsport vehicles and equipment for compliance	
<b>Motorsport - Management, Leadership and Supervision</b>		
AURMMA4002	Manage the preparation of a competition vehicle	
<b>Motorsport - Health and Safety</b>		
AURMSA2001	Follow motorsport safety and risk management procedures	
AURMSA3002	Implement and monitor safety and risk management in a motorsport environment	
<b>Motorsport - Technical - Steering and Suspension</b>		
AURMTD4001	Test suspension dampers using a dynamometer	MEM30012A
AURMTD4002	Prepare competition vehicle suspension	AURLTD3005 AURTTD2004
<b>Motorsport - Technical -Engines</b>		
AURMTE4001	Test engines using a dynamometer	
<b>Motorsport - Technical - Fuel Systems</b>		
AURMTF4001	Analyse and repair complex performance carburetted fuel	AURTTF2001

Unit code	Unit title	Prerequisites
	systems	AURTTF3006
AURMTF4002	Analyse and repair performance fuel injection systems	AURETR3023 AURTTF2001
<b>Motorsport - Technical - Wheels and Tyres</b>		
AURMTJ4001	Select and prepare tyres and wheels for motorsport applications	
<b>Motorsport - Technical - Driveline and Final Drives</b>		
AURMTQ4001	Analyse and repair complex performance driveline systems	AURLTQ3001 AURLTQ3002 AURLTX3001 AURMTA3007
<b>Mechanical Miscellaneous - Technical</b>		
AURTTA4021	Carry out diagnosis of complex system faults	
<b>Mechanical Miscellaneous - Technical - Brakes</b>		
AURTTB3005	Assemble and fit braking systems and components	
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>		
AURTTC3003	Diagnose and repair cooling systems	
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>		
AURTTD2002	Inspect and service steering systems	
AURTTD2004	Inspect and service suspension systems	
AURTTD4005	Overhaul steering system components	
<b>Mechanical Miscellaneous - Technical - Engines</b>		
AURTTE4005	Overhaul engines and associated engine components	
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>		
AURTTF2001	Service petrol fuel systems	
AURTTF3005	Inspect and repair engine forced induction systems	

Unit code	Unit title	Prerequisites
AURTTTF4007	Overhaul petrol fuel system components	
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>		
AURTTJ2001	Balance wheels and tyres	
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>		
AURTTK2001	Use and maintain measuring equipment in an automotive workplace	
<b>Mechanical Miscellaneous - Technical - Manufacture</b>		
AURTTM3003	Apply metal to rebuild engine components	
AURTTM3004	Assemble engine blocks and sub-assemblies	
AURTTM3008	Dismantle and evaluate engine blocks and sub-assemblies	
AURTTM3010	Heat treat, straighten and reclaim engine components	
AURTTM3011	Recondition engine cylinder heads	
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>		
AURTTQ2001	Service final drive assemblies	
AURTTQ4004	Overhaul final drive assemblies	
<b>Mechanical Miscellaneous - Technical - Fabrication</b>		
AURTTTS2001	Fabricate exhaust system and components	
<b>Mechanical Miscellaneous - Technical - Transmission</b>		
AURTTX2003	Inspect and service transmissions (automatic)	
AURTTX4007	Overhaul clutch assemblies	
AURTTX4008	Overhaul transmissions (manual)	
AURTTX4009	Overhaul transmissions (automatic)	
<b>Vehicle Body - Technical</b>		
AURVTA3002	Remove and replace supplementary restraint systems	

Unit code	Unit title	Prerequisites
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>		
AURVTW2001	Carry out manual metal arc welding procedures	
AURVTW2002	Carry out brazing procedures	
AURVTW2003	Carry out gas metal arc welding procedures	
AURVTW2004	Carry out gas tungsten arc welding procedures	
AURVTW2005	Carry out spot welding procedures	
AURVTW3006	Carry out thermoplastic welding procedures	
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures	
<b>Imported Units</b>		
MEM07005C	Perform general machining	MEM09002B MEM12023A MEM18001C
MEM09002B	Interpret technical drawing	
MEM12023A	Perform engineering measurements	
MEM18001C	Use hand tools	
MEM18002B	Use power tools/hand held operations	
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment	

## Custom Content Section

Not applicable.

## AUR31012 Certificate III in Automotive Sales

### Modification History

Release	Comment
Release 1	Replaces AUR31005 Certificate III in Automotive Sales
Release 2	BSBSLS402A superseded by BSBSLS407A BSBSLS403A superseded by BSBSLS408A Units removed from Specialist Elective Units: BSBSLS404A BSBSLS405A

## Description

This qualification covers the skills and knowledge required to perform sales-related tasks in the automotive retail, service or repair industry.

### Job roles and employment outcomes

The Certificate III in Automotive Sales prepares new employees or recognises and develops existing workers who are performing general sales and marketing functions in an automotive retail, service or repair business.

Job roles related to this qualification include:

- parts interpreter
- vehicle salesperson
- farm machinery salesperson
- motorcycle salesperson.

### Application

This qualification is suitable for an Australian traineeship pathway.

## Pathways Information

### Pathways into the qualification

Credit will be granted towards this qualification to those who have completed AUR21112 Certificate II in Automotive Sales in this Training Package or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40112 Certificate IV in Automotive Management or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills for this qualification as identified by the automotive industry. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information to others, including use of automotive terms</li> <li>collecting, analysing and organising information</li> <li>completing workplace reports</li> <li>communicating ideas and information to workplace colleagues</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>communicating with people who speak languages other than English and in a cross-cultural context</li> <li>interpreting needs of internal and external clients</li> <li>reading and interpreting workplace-related documentation</li> <li>writing to audience needs</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working in a team to provide office administration services</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> <li>rectifying discrepancies or errors in documentation and transactions</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>

## EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills for this qualification as identified by the automotive industry. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• prioritising actions to achieve required outcomes</li> <li>• planning own work requirements</li> <li>• identifying tasks to achieve team goals</li> <li>• allocating resources to workplace tasks and requirements</li> <li>• collecting, analysing and organising workplace data</li> <li>• identifying risk factors and taking action to minimise risk</li> <li>• organising meeting schedules for clients and colleagues and negotiating alternative arrangements</li> <li>• planning for contingencies</li> <li>• planning information and documentation requirements</li> <li>• using and determining required resources</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• selecting and using appropriate equipment, materials, processes and procedures</li> <li>• recognising limitations and seeking timely advice</li> <li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li> <li>• following workplace documentation, such as codes of practice and operating procedures</li> <li>• projecting a professional image when representing the organisation</li> <li>• taking personal responsibility at the appropriate level</li> <li>• working ethically when dealing with financial transactions</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>• asking questions to gain information</li> <li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li> <li>• participating in self-improvement activities</li> <li>• participating in development of workplace continuous improvement strategies</li> <li>• helping others develop competency</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• selecting and using appropriate equipment and materials</li> <li>• using business technology, such as software programs for word processing, spreadsheets, presentations and scheduling</li> </ul>

## Packaging Rules

To be awarded this qualification, competency must be achieved in **20 units** of competency, consisting of:

- **10 core units**

plus

- **6 specialist elective units** in **one** of the selected specialist groups relating to occupational streams

plus

- **4 general elective units**, of which:
  - up to **4** elective units may be chosen from the elective units listed below
  - up to **4** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common – Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common – Foundation Skills</b>	
AURAF2004	Solve routine problems in an automotive workplace
<b>Common – Management, Leadership and Supervision</b>	
AURAMA3004	Maintain business image
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Sales and Parts, Administration and Management – Administration</b>	
AURSAA2001	Process customer complaints
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	

Unit code	Unit title
AURSCA2005	Sell products
AURSCA2006	Promote products and services
<b>Sales and Parts, Administration and Management – Regulatory or Legal</b>	
AURSLA2001	Apply legal requirements relating to product sales
<b>Imported Units</b>	
BSBITU305A	Conduct online transactions

### Specialist elective units

#### Group A: Parts Interpreting

Unit code	Unit title
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR3025	Test, charge and replace batteries
<b>Sales and Parts, Administration and Management – Support and Logistics</b>	
AURSBA2001	Carry out warehousing procedures
AURSBA3002	Apply automotive parts interpretation process
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2001	Select automotive parts and products
<b>Imported Units</b>	
BSBPRO401A	Develop product knowledge
BSBWOR204A	Use business technology
SIRXINV002A	Maintain and order stock
SIRXMER201	Merchandise products
TLIA2012A	Pick and process orders

#### Group B: Vehicle, Farm Machinery and Motorcycles Sales

Unit code	Unit title
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	
AURSCA2002	Present stock and sales area
AURSCA2003	Apply sales procedures
AURSCA3007	Determine used motor vehicle stock requirements
AURSCA3008	Wholesale used motor vehicle stock
AURSCA3009	Provide vehicle technology information
<b>Imported Units</b>	
BSBSLS407A	Identify and plan sales prospects
BSBSLS408A	Present, secure and support sales solutions

**General elective units**

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA3003	Build customer relations
<b>Common – Foundation Skills</b>	
AURAF2001	Use numbers in an automotive workplace
AURAF2002	Read in an automotive workplace
AURAF2003	Communicate effectively in an automotive workplace
<b>Common – Management, Leadership and Supervision</b>	
AURAMA2002	Communicate business information
AURAMA3003	Conduct information sessions
<b>Common – Quality</b>	
AURAQA2001	Contribute to quality work outcomes
<b>Sales and Parts, Administration and Management – Sales and Marketing</b>	

Unit code	Unit title
AURSCA2001	Select automotive parts and products
AURSCA2002	Present stock and sales area
AURSCA2004	Carry out cash, credit and funds transfers
AURSCA3007	Determine used motor vehicle stock requirements
AURSCA3008	Wholesale used motor vehicle stock
<b>Sales and Parts, Administration and Management – Sales and Marketing – Paint</b>	
AURSCP2001	Provide information to customers on automotive refinishing products
<b>Imported Units</b>	
BSBFIA301A	Maintain financial records
SIRXCCS201	Apply point-of-sale handling procedures
SIRXFIN201	Balance and secure point-of-sale terminal
SIRXICT001A	Operate retail technology
SIRXINV001A	Perform stock control procedures
SIRXMER303	Coordinate merchandise presentation
TAEDEL301A	Provide work skill instruction
TLIA2012A	Pick and process orders
TLIA2020A	Replenish stock

## Custom Content Section

Not applicable.

## AUR31212 Certificate III in Mobile Plant Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30405 Certificate III in Automotive Mechanical Technology

### Description

This qualification covers the skills and knowledge required to perform a broad range of tasks on a variety of mobile plant vehicles in the automotive service and repair industry. It is suitable for entry into the mining, construction and agricultural environment.

#### Job roles and employment outcomes

The Certificate III in Mobile Plant Technology prepares new employees or recognises and develops existing workers performing mechanical work in the automotive heavy vehicle service and repair sector.

Job roles related to this qualification include:

- mobile plant technician
- diesel fitter.

#### Application definitely

This qualification is suitable for an Australian apprenticeship pathway.

### Pathways Information

#### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

#### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating verbal and non-verbal workplace information and ideas with workplace colleagues, including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"> <li>• recognising limitations and seeking timely advice</li> <li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li> <li>• following workplace documentation, such as codes of practice and operating procedures</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>• asking questions to gain information</li> <li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li> <li>• participating in self-improvement activities</li> <li>• participating in development of workplace continuous improvement strategies</li> <li>• helping others develop competency</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• operating diagnostic and test equipment</li> <li>• performance testing of components, systems and equipment</li> <li>• using tools and equipment efficiently and safely</li> <li>• storing and caring for components, parts, tools, test equipment and support equipment</li> <li>• using business technology to collect, analyse and provide information</li> </ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **36 units** of competency, consisting of:

- **22 core units**

plus

- **14 elective units**, of which:

- up to **14** elective units may be chosen from the elective units listed below
- up to **6** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
AURETR3025	Test, charge and replace batteries
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
<b>Mechanical – Heavy Vehicle – Technical – Engines</b>	
AURHTE3002	Repair engines and associated engine components (heavy vehicle)
<b>Mechanical – Mobile Plant – Technical</b>	
AURKTA3005	Inspect, service and repair tracked type drive and support systems

Unit code	Unit title
<b>Mechanical – Mobile Plant – Technical – Brakes</b>	
AURKTB3001	Diagnose and repair mobile plant braking systems
<b>Mechanical – Mobile Plant – Technical – Steering and Suspension</b>	
AURKTD3002	Diagnose and repair mobile plant steering systems
<b>Mechanical – Mobile Plant – Technical – Driveline and Final Drives</b>	
AURKTQ3001	Diagnose and repair mobile plant final drive assemblies
<b>Mechanical – Mobile Plant – Technical – Transmission</b>	
AURKTX3001	Diagnose and repair powershift transmissions
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2006	Service hydraulic systems
AURTTA3013	Repair hydraulic systems
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>	
AURTTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>	
AURTTF3004	Repair diesel fuel injection systems
AURTTF3005	Inspect and repair engine forced induction systems
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous – Technical – Transmission</b>	
AURTTX3006	Repair transmissions (hydrostatic)

### Elective units

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common – Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common – Technical</b>	
AURATA2002	Read and interpret engineering drawings
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR3032	Repair electrical systems
<b>Electrical – Technical – Air Conditioning and HVAC</b>	
AURETU2003	Service air conditioning and HVAC systems
AURETU3004	Diagnose and repair air conditioning and HVAC systems
AURETU3005	Retrofit and modify air conditioning and HVAC systems
<b>Mechanical – Heavy Vehicle – Technical – Brakes</b>	
AURHTB3001	Repair air braking systems
<b>Mechanical – Heavy Vehicle – Technical – Engines</b>	
AURHTE2001	Remove and install heavy vehicle engine assemblies
<b>Mechanical – Heavy Vehicle – Technical – Wheels and Tyres</b>	
AURHTJ2006	Remove, inspect, repair and fit tyres and tubes (heavy)
<b>Mechanical – Heavy Vehicle – Technical – Driveline and Final Drives</b>	
AURHTQ3003	Repair final drive – driveline (heavy vehicle)
<b>Mechanical – Heavy Vehicle – Technical – Transmission</b>	
AURHTX3002	Inspect, test and replace transmissions - automatic (heavy vehicle)
AURHTX3004	Diagnose and repair heavy vehicle clutch systems
<b>Mechanical – Heavy Vehicle – Technical – Emission and Exhaust</b>	

Unit code	Unit title
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems
<b>Mechanical – Mobile Plant – Technical</b>	
AURKTA3001	Synchronise plant and equipment
<b>Mechanical – Mobile Plant – Technical – Steering and Suspension</b>	
AURKTD3001	Diagnose and repair mobile plant suspension systems
<b>Mechanical – Mobile Plant – Technical – Electrical and Electronic</b>	
AURKTR3001	Diagnose and repair electric-over-hydraulic control systems
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA2007	Inspect, service and repair pneumatic systems
AURTTA3011	Install hydraulic systems to specified applications
AURTTA3012	Manufacture and install fluid power hose assemblies
AURTTA3014	Assemble and install pneumatic systems and components
<b>Mechanical Miscellaneous – Technical – Brakes</b>	
AURTTB2001	Inspect and service braking systems
AURTTB2004	Inspect and service air braking systems
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>	
AURTTC2001	Inspect and service cooling systems
<b>Mechanical Miscellaneous – Technical – Steering and Suspension</b>	
AURTTD2002	Inspect and service steering systems
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous – Technical – Engines</b>	
AURTTE2004	Inspect and service engines
AURTTE4005	Overhaul engines and associated engine components

Unit code	Unit title
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>	
AURTTTF2002	Service diesel fuel injection systems
AURTTTF4003	Overhaul diesel fuel injection systems
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
<b>Mechanical Miscellaneous – Technical – Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies
AURTTQ2003	Service final drive (driveline)
<b>Mechanical Miscellaneous – Technical – Transmission</b>	
AURTTX2002	Inspect and service transmissions (manual)
AURTTX2003	Inspect and service transmissions (automatic)
AURTTX2004	Service transmissions (hydrostatic)
<b>Mechanical Miscellaneous – Technical – Emission and Exhaust</b>	
AURTTZ2002	Repair exhaust system components
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR31312 Certificate III in Automotive Engine Reconditioning

### Modification History

Release	Comment
Release 1	Replaces AUR31311 Certificate III in Automotive Engine Reconditioning Unit codes updated to meet policy requirements

## Description

This qualification covers the skills and knowledge required to recondition engines in the automotive service and repair sector. It is suitable for entry into the automotive specialist service and repair sector.

### Job roles and employment outcomes

The Certificate III in Automotive Engine Reconditioning is intended to prepare new employees or recognise and develop existing workers who recondition engines.

Job roles related to this qualification include:

- automotive engine reconditioners.

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR21512 Certificate II in Automotive Cylinder Head Reconditioning or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40112 Certificate IV in Automotive Management or other relevant qualifications.

## Licensing/Regulatory Information

Some jurisdictions may require this qualification for licensing purposes. In addition some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and taking action to resolve it</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> <li>undertaking numerical operations, calculations and using formulae (including addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages)</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **28 units** of competency, consisting of:

- **13 core units**

plus

- **15 elective units**, of which:

- up to **15** elective units may be chosen from the elective units listed below
- up to **5** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common- Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Motorsport - Technical</b>	
AURMTA3007	Conduct non-destructive testing
<b>Miscellaneous Mechanical - Technical - Engines</b>	
AURTTE3001	Apply knowledge of engine science
<b>Miscellaneous Mechanical - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment
<b>Miscellaneous Mechanical - Technical - Manufacture</b>	
AURTTM3002	Repair bearing tunnels and connecting rods in engines
AURTTM3004	Assemble engine blocks and sub-assemblies
AURTTM3007	Carry out grinding operations

Unit code	Unit title
AURTTM3008	Dismantle and evaluate engine blocks and sub-assemblies
AURTTM3009	Fit sleeves and bore and hone engine cylinders
AURTTM3011	Recondition engine cylinder heads
<b>Miscellaneous Mechanical - Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW3003	Carry out machining operations

**Elective units**

Unit code	Unit title
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>	
AURHTE3002	Repair engines and associated engine components (heavy vehicle)
<b>Mechanical -Light Vehicle -Technical -Engines</b>	
AURLTE2001	Remove and install light vehicle engine assemblies
AURLTE3002	Repair engines and associated engine components (light vehicle)
<b>Miscellaneous Mechanical -Technical</b>	
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA2009	Carry out pre-repair operations (mechanical)
AURTTA3018	Carry out diagnostic procedures
<b>Miscellaneous Mechanical – Technical -Fuel Systems</b>	
AURTTF3005	Inspect and repair engine forced induction systems
<b>Miscellaneous Mechanical -Technical - Manufacture</b>	
AURTTM3001	Operate and monitor computer numerical control machines
AURTTM3003	Apply metal to rebuild engine components
AURTTM3005	Balance rotating and reciprocating engine components
AURTTM3006	Perform advanced machining and blueprinting of engine components

Unit code	Unit title
AURTTM3010	Heat treat, straighten and reclaim engine components
<b>Miscellaneous Mechanical -Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW3002	Set, operate and monitor specialist machines
<b>Vehicle Body -Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR31412 Certificate III in Automotive Diesel Fuel Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30611 Certificate III in Automotive Specialist

## Description

This qualification covers the skills and knowledge required to repair diesel fuel systems within the automotive service and repair sector.

### Job roles and employment outcomes

The Certificate III in Automotive Diesel Fuel Technology is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the automotive heavy vehicle service and repair sector.

Employment outcomes targeted by this qualification include:

- automotive heavy vehicle diesel fuel technicians

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **21 units of competency, consisting of:**

- **13 core units**

plus

- **8 elective units**, of which:

- up to **8** elective units may be chosen from the elective units listed below
- up to **4** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
<b>Mechanical - Heavy Vehicle - Technical - Emission and Exhaust</b>	
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Engine</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	

Unit code	Unit title
AURTTTF2002	Service diesel fuel injection systems
AURTTTF3004	Repair diesel fuel injection systems
AURTTTF3005	Inspect and repair engine forced induction systems
AURTTTF4003	Overhaul diesel fuel injection systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment

**Elective units**

Unit code	Unit title
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Mechanical - Heavy Vehicle - Technical - Engine</b>	
AURHTE2001	Remove and install heavy vehicle engine assemblies
AURHTE3002	Repair engines and associated engine components (heavy vehicle)
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2006	Service hydraulic systems
AURTTA3011	Install hydraulic systems to specified applications
AURTTA3012	Manufacture and install fluid power hose assemblies
AURTTA3013	Repair hydraulic systems
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	

Unit code	Unit title
AURTTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2002	Repair exhaust system components
<b>Vehicle Body – Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

# AUR31512 Certificate III in Automotive Diesel Engine Technology

## Modification History

Release	Comment
Release 1	Replaces AUR30611 Certificate III in Automotive Specialist

## Description

This qualification covers the skills and knowledge required to perform a range of tasks on a variety of diesel engines and associated systems within the automotive service and repair sector.

### Job roles and employment outcomes

The Certificate III in Automotive Diesel Engine Technology is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the diesel engine service and repair sector.

Employment outcomes targeted by this qualification include:

- diesel engine technicians

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## **Pathways Information**

### **Pathways into the qualification**

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### **Pathways from the qualification**

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **28 units** of competency, consisting of:

- **14 core units**

plus

- **14 elective units**, of which:

- up to **14** elective units may be chosen from the elective units listed below
- up to **5** elective units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Health &amp; Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3025	Test, charge and replace batteries
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>	
AURHTE3002	Repair engines and associated engine components (heavy vehicle)
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	

Unit code	Unit title
AURTTTF3004	Repair diesel fuel injection systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Manufacture</b>	
AURTTM3004	Assemble engine blocks and sub-assemblies
AURTTM3008	Dismantle and evaluate engine blocks and sub-assemblies
AURTTM3011	Recondition engine cylinder heads

**Elective units**

Unit code	Unit title
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
AURETR3028	Diagnose and repair instruments and warning systems
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
AURETR3032	Repair electrical systems
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>	
AURHTE2001	Remove and install heavy vehicle engine assemblies

Unit code	Unit title
<b>Mechanical - Heavy Vehicle - Technical - Transmission</b>	
AURHTX3004	Diagnose and repair heavy vehicle clutch systems
<b>Mechanical - Heavy Vehicle - Technical - Emission and Exhaust</b>	
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems
<b>Motorsport - Technical - Engines</b>	
AURMTE4001	Test engines using a dynamometer
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA2009	Carry out pre-repair operations (mechanical)
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTF2002	Service diesel fuel injection systems
AURTTF3005	Inspect and repair engine forced induction systems
<b>Mechanical Miscellaneous - Technical - Alternative Fuels</b>	
AURTTL3001	Service CNG fuel systems
AURTTL3002	Diagnose and repair CNG fuel systems
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures
<b>Imported Units</b>	
MEM05006C	Perform brazing and or silver soldering
MEM05007C	Perform manual heating and thermal cutting
MEM18028B	Maintain engine lubrication systems

## Custom Content Section

Not applicable.

## AUR31612 Certificate III in Automotive Drivetrain Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30611 Certificate III in Automotive Specialist

## Description

This qualification covers the skills and knowledge required to perform a broad range of tasks on a variety of drivetrain systems within the automotive service and repair sector.

### Job roles or employment outcomes

The Certificate III in Automotive Drivetrain Technology is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the automotive light or heavy vehicle service and repair sector.

Employment outcomes targeted by this qualification include:

- automotive light vehicle repair technicians
- automotive heavy vehicle repair technicians

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Mechanical Servicing technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **25 units** of competency, consisting of:

- **11 core units**

plus

**all specialist elective units** in **one** of the selected specialist groups relating to occupational streams

plus

- **10-12** general elective units to bring the **total** number of units to **25**, of which:
  - **10-12** elective units may be chosen from the elective units listed below;
  - up to **5** elective units may be chosen from a Certificate II qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3025	Test, charge and replace batteries
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies

Unit code	Unit title
AURTTQ2002	Remove and refit driveline components
AURTTQ2003	Service final drive (driveline)
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX2002	Inspect and service transmissions (manual)
AURTTX2003	Inspect and service transmissions (automatic)

**Group A: Elective units - Light Vehicle Automatic Drivelines**

Unit code	Unit title
<b>Electrical - Technical - Driveline and Final Drives</b>	
AURETR3044	Service and repair electronic drive management systems
<b>Mechanical - Light Vehicle - Technical - Transmission</b>	
AURLTX3002	Repair transmissions – automatic (light vehicle)
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX4009	Overhaul transmissions (automatic)

**Group B: Elective units – Heavy Vehicle Automatic Drivelines**

Unit code	Unit title
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR3044	Service and repair electronic drive management systems
<b>Mechanical - Heavy Vehicle - Technical - Transmission</b>	
AURHTX3003	Repair transmissions - automatic (heavy vehicle)

**Group C: Elective units - Light Vehicle Manual Drivelines**

Unit code	Unit title
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Unit code	Unit title
<b>Mechanical - Light Vehicle - Technical - Driveline and Final Drives</b>	
AURLTQ3001	Repair final drive assemblies (light vehicle)
AURLTQ3002	Repair final drive – driveline (light vehicle)
<b>Mechanical - Light Vehicle – Technical - Transmission</b>	
AURLTX3001	Repair transmissions - manual (light vehicle)
<b>Mechanical Miscellaneous – Technical - Transmission</b>	
AURTTX4008	Overhaul transmissions (manual)

**Group D: Elective units – Heavy Vehicle Manual Drivelines**

Unit code	Unit title
<b>Mechanical - Heavy Vehicle - Technical - Driveline and Final Drives</b>	
AURHTQ3002	Repair final drive assemblies (heavy vehicle)
AURHTQ3003	Repair final drive – driveline (heavy vehicle)
<b>Mechanical - Heavy Vehicle – Technical - Transmission</b>	
AURHTX3001	Repair transmissions – manual (heavy vehicle)
<b>Mechanical Miscellaneous – Technical - Transmission</b>	
AURTTX4008	Overhaul transmissions (manual)

**General elective units**

Unit Code	Unit Title
<b>Mechanical - Heavy Vehicle - Technical - Transmission</b>	
AURHTX3004	Diagnose and repair heavy vehicle clutch systems
<b>Mechanical - Mobile Plant - Technical - Driveline and Final Drives</b>	
AURKTQ3001	Diagnose and repair mobile plant final drive assemblies

Unit Code	Unit Title
<b>Mechanical - Mobile Plant - Technical - Transmission</b>	
AURKTX3001	Diagnose and repair powershift transmissions
<b>Mechanical - Light Vehicle - Technical - Transmission</b>	
AURLTX3003	Diagnose and repair light vehicle clutch systems
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ4004	Overhaul final drive assemblies
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX3006	Repair transmissions (hydrostatic)
AURTTX4007	Overhaul clutch assemblies
AURTTX4011	Overhaul torque converters

## Custom Content Section

Not applicable.

## AUR31712 Certificate III in Forklift Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30611 Certificate III in Automotive Specialist

### Description

This qualification covers the skills and knowledge required to perform a broad range of tasks on a variety of forklift systems in the automotive service and repair industry.

#### Job roles and employment outcomes

The Certificate III in Forklift Technology prepares new employees or recognises and develops existing workers performing mechanical work in the automotive forklift service and repair industry.

Job roles related to this qualification include:

- automotive forklift repair technician
- automotive forklift mechanic.

#### Application

This qualification is suitable for an Australian apprenticeship pathway.

## **Pathways Information**

### **Pathways into the qualification**

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### **Pathways from the qualification**

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information and ideas with workplace colleagues, including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **28 units** of competency, consisting of:

- **18 core units**

plus

- **10 elective units**, of which:
  - up to **10** elective units may be chosen from the elective units listed below
  - up to **5** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3025	Test, charge and replace batteries
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
<b>Mechanical – Heavy Vehicle – Technical – Brakes</b>	
AURHTB3002	Diagnose and repair heavy vehicle hydraulic braking systems
<b>Mechanical – Heavy Vehicle – Technical – Steering and Suspension</b>	
AURHTD3002	Repair steering systems (heavy vehicle)
<b>Mechanical – Lifting Equipment – Technical</b>	
AURNTA3001	Inspect, service and repair lift truck mast assemblies

Unit code	Unit title
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA2006	Service hydraulic systems
AURTTA3013	Repair hydraulic systems
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous – Technical – Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous – Technical – Cooling Systems</b>	
AURTTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous – Technical – Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

**Elective units**

Unit code	Unit title	Prerequisites
<b>Common – Sales and Marketing</b>		
AURACA2001	Establish relations with customers	
<b>Common – Foundation Skills</b>		
AURAF2003	Communicate effectively in an automotive workplace	
<b>Electrical – Technical – Hybrid Vehicle and Battery Electric Vehicle</b>		
AURETH3001	Depower battery electric vehicles	
AURETH3002	Service and maintain battery electric vehicles	AURETH3001

Unit code	Unit title	Prerequisites
<b>Electrical – Technical – Tools and Equipment</b>		
AURETK2002	Use and maintain automotive electrical test equipment	
<b>Electrical – Technical – Electrical and Electronic</b>		
AURETR2007	Demonstrate knowledge of automotive electrical circuits and wiring systems	
AURETR2010	Fabricate, test and repair wiring harnesses and looms	
AURETR2011	Install and test basic ancillary electrical components	
AURETR3019	Inspect, service and repair AC electric motor drive systems	
AURETR3021	Inspect, service and repair electronic management, monitoring and tracking systems	
AURETR3023	Diagnose and repair electronic spark ignition engine management systems	
AURETR3024	Diagnose and repair electronic compression ignition engine management systems	
AURETR3028	Diagnose and repair instruments and warning systems	
AURETR3031	Diagnose and repair ignition systems	
AURETR3032	Repair electrical systems	
AURETR3044	Service and repair electronic drive management systems	
<b>Electrical – Technical – Air Conditioning and HVAC</b>		
AURETU2003	Service air conditioning and HVAC systems	
AURETU3004	Diagnose and repair air conditioning and HVAC systems	
AURETU3005	Retrofit and modify air conditioning and HVAC systems	
<b>Mechanical – Heavy Vehicle – Technical – Engines</b>		
AURHTE2001	Remove and install heavy vehicle engine assemblies	
AURHTE3002	Repair engines and associated engine components (heavy vehicle)	

Unit code	Unit title	Prerequisites
<b>Mechanical – Heavy Vehicle – Technical – Wheels and Tyres</b>		
AURHTJ2006	Remove, inspect, repair and fit tyres and tubes (heavy)	
<b>Mechanical – Heavy Vehicle – Technical – Driveline and Final Drives</b>		
AURHTQ3002	Repair final drive assemblies (heavy vehicle)	
<b>Mechanical – Heavy Vehicle – Technical – Emission and Exhaust</b>		
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems	
<b>Mechanical – Mobile Plant – Technical – Electrical and Electronic</b>		
AURKTR3001	Diagnose and repair electric-over-hydraulic control systems	
<b>Mechanical – Light Vehicle – Brakes</b>		
AURLTB3003	Diagnose and repair light vehicle hydraulic braking systems	
<b>Mechanical – Light Vehicle – Technical – Steering and Suspension</b>		
AURLTD3004	Repair steering systems (light vehicle)	
AURLTD3005	Repair suspension systems (light vehicle)	
AURLTD3006	Carry out wheel alignment operations (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Engines</b>		
AURLTE2001	Remove and install light vehicle engine assemblies	
AURLTE3002	Repair engines and associated engine components (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Wheels and Tyres</b>		
AURLTJ2001	Select tyres and rims for specific applications (light)	
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)	
AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies	
<b>Mechanical – Light Vehicle – Technical – Driveline and Final Drives</b>		

Unit code	Unit title	Prerequisites
AURLTQ3001	Repair final drive assemblies (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Transmission</b>		
AURLTX3002	Repair transmissions – automatic (light vehicle)	
AURLTX3003	Diagnose and repair light vehicle clutch systems	
<b>Mechanical – Light Vehicle – Technical – Emission and Exhaust</b>		
AURLTZ3001	Diagnose and repair light vehicle emission control systems	
<b>Mechanical Miscellaneous – Technical</b>		
AURTTA2009	Carry out pre-repair operations (mechanical)	
AURTTA3011	Install hydraulic systems to specified applications	
AURTTA3012	Manufacture and install fluid power hose assemblies	
AURTTA3017	Carry out vehicle safety and roadworthy inspections	
<b>Mechanical Miscellaneous – Technical – Brakes</b>		
AURTTB2003	Machine brake drums and brake disc rotors	
AURTTB3006	Inspect, service and repair auxiliary braking systems	
<b>Mechanical Miscellaneous – Technical – Steering and Suspension</b>		
AURTTD2002	Inspect and service steering systems	
AURTTD2004	Inspect and service suspension systems	
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>		
AURTTF2001	Service petrol fuel systems	
AURTTF2002	Service diesel fuel injection systems	
AURTTF3004	Repair diesel fuel injection systems	
AURTTF3005	Inspect and repair engine forced induction systems	
AURTTF3006	Diagnose and repair petrol carburettor systems	

Unit code	Unit title	Prerequisites
<b>Mechanical Miscellaneous – Technical – Wheels and Tyres</b>		
AURTTJ2001	Balance wheels and tyres	
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>		
AURTTK2001	Use and maintain measuring equipment in an automotive workplace	
<b>Mechanical Miscellaneous – Technical – Alternative Fuels</b>		
AURTTL3001	Service CNG fuel systems	
AURTTL3002	Diagnose and repair CNG fuel systems	
AURTTL3007	Service LPG fuel systems	
AURTTL3008	Diagnose and repair LPG fuel systems	
<b>Mechanical Miscellaneous – Technical – Driveline and Final Drives</b>		
AURTTQ2001	Service final drive assemblies	
AURTTQ2003	Service final drive (driveline)	
<b>Mechanical Miscellaneous – Technical – Welding, Grinding, Machining and Soldering</b>		
AURTTW2001	Carry out soft soldering techniques	
<b>Mechanical Miscellaneous – Technical – Transmission</b>		
AURTTX2002	Inspect and service transmissions (manual)	
AURTTX2003	Inspect and service transmissions (automatic)	
AURTTX2004	Service transmissions (hydrostatic)	
AURTTX3006	Repair transmissions (hydrostatic)	
<b>Mechanical Miscellaneous – Technical – Emission and Exhaust</b>		
AURTTZ2002	Repair exhaust system components	
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>		
AURVTW2001	Carry out manual metal arc welding procedures	

Unit code	Unit title	Prerequisites
AURVTW2002	Carry out brazing procedures	
AURVTW2003	Carry out gas metal arc welding procedures	
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures	

## Custom Content Section

Not applicable.

## AUR31812 Certificate III in Heavy Commercial Trailer Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30611 Certificate III in Automotive Specialist

## Description

This qualification covers the skills and knowledge required to repair trailers and associated systems within the automotive service and repair sector.

### Job roles and employment outcomes

The Certificate III in Heavy Commercial Trailer Technology is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the automotive heavy vehicle service and repair sector.

Employment outcomes targeted by this qualification include:

- heavy commercial trailer technicians

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Mechanical Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **28 units** of competency, consisting of:

- **12 core units**

plus

- **16 elective units**, of which:

- up to **16** elective units may be chosen from the elective units listed below
- up to **5** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2009	Install, test and repair vehicle lighting and wiring systems
AURETR2012	Test and repair basic electrical circuits
AURETR3022	Diagnose and repair vehicle dynamic control systems
<b>Mechanical - Heavy Vehicle - Technical - Brakes</b>	
AURHTB3001	Repair air braking systems
<b>Mechanical - Heavy Vehicle - Technical - Steering and Suspension</b>	
AURHTD3003	Repair suspension systems (heavy vehicle)
<b>Mechanical - Heavy Vehicle - Technical - Wheels and Tyres</b>	
AURHTJ2003	Remove, inspect and refit heavy vehicle wheel assemblies
<b>Mechanical - Heavy Vehicle - Technical - Chassis and Frame</b>	

Unit code	Unit title
AURHTY3002	Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2006	Service hydraulic systems
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment

**Elective units**

Unit code	Unit title
<b>Common - Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common - Technical</b>	
AURATA2002	Read and interpret engineering drawings
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2010	Fabricate, test and repair wiring harnesses and looms
AURETR2011	Install and test basic ancillary electrical components
<b>Mechanical - Heavy Vehicle - Technical - Brakes</b>	
AURHTB3002	Diagnose and repair heavy vehicle hydraulic braking systems
AURHTB3007	Diagnose and repair heavy vehicle electronic braking systems
<b>Mechanical - Heavy Vehicle - Technical - Wheels and Tyres</b>	
AURHTJ2002	Select heavy vehicle tyres and rims for specific applications

Unit code	Unit title
AURHTJ2006	Remove, inspect, repair and fit tyres and tubes (heavy)
<b>Mechanical - Heavy Vehicle – Electrical and Electronic</b>	
AURHTR3005	Diagnose and repair heavy trailer electronically controlled roll stability systems
<b>Mechanical - Heavy Vehicle - Technical - Chassis and Frame</b>	
AURHTY2001	Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA3011	Install hydraulic systems to specified applications
AURTTA3012	Manufacture and install fluid power hose assemblies
AURTTA3013	Repair hydraulic systems
AURTTA3014	Assemble and install pneumatic systems and components
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
AURTTB2004	Inspect and service air braking systems
AURTTB3005	Assemble and fit braking systems and components
AURTTB3006	Inspect, service and repair auxiliary braking systems
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>	
AURTTJ2001	Balance wheels and tyres
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures

Unit code	Unit title
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR31912 Certificate III in Elevating Work Platform Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30611 Certificate III in Automotive Specialist
Release 2	Updated imported elective units: RIIHAN301D replaces RIIHAN301B

## Description

This qualification covers the skills and knowledge required to perform a broad range of tasks on a variety of elevating work platforms and associated systems within the automotive service and repair sector.

### Job roles and employment outcomes

The Certificate III in Elevating Work Platform Technology is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the elevating work platform service and repair sector.

Employment outcomes targeted by this qualification include:

- elevating work platform technicians

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **32 units** of competency, consisting of:

- **20 core units**

plus

- **12 elective units**, of which:

- up to **12** elective units may be chosen from the elective units listed below
- up to **6** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3025	Test, charge and replace batteries
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>	
AURHTE3002	Repair engines and associated engine components (heavy vehicle)
<b>Mechanical - Heavy Vehicle - Technical - Driveline and Final Drives</b>	
AURHTQ3002	Repair final drive assemblies (heavy vehicle)
AURHTQ3003	Repair final drive - driveline (heavy vehicle)
<b>Mechanical - Light Vehicle - Technical - Brakes</b>	
AURLTB3003	Diagnose and repair light vehicle hydraulic braking systems
<b>Mechanical Miscellaneous - Technical</b>	

Unit code	Unit title
AURTTA2004	Carry out servicing operations
AURTTA2005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA2006	Service hydraulic systems
AURTTA3013	Repair hydraulic systems
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTF3004	Repair diesel fuel injection systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2001	Use and maintain measuring equipment in an automotive workplace
AURTTK2002	Use and maintain workplace tools and equipment
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures

**Elective units**

Unit code	Unit title
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace

Unit code	Unit title
<b>Electrical - Technical - Hybrid Vehicle and Battery Electric Vehicle</b>	
AURETH3001	Depower battery electric vehicles
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2005	Install, test and repair electrical security systems and components
AURETR2010	Fabricate, test and repair wiring harnesses and looms
AURETR2011	Install and test basic ancillary electrical components
AURETR3021	Inspect, service and repair electronic management, monitoring and tracking systems
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
AURETR3028	Diagnose and repair instruments and warning systems
AURETR3029	Diagnose and repair charging systems
AURETR3030	Diagnose and repair starting systems
AURETR3031	Diagnose and repair ignition systems
AURETR3032	Repair electrical systems
AURETR3044	Service and repair electronic drive management systems
<b>Mechanical - Heavy Vehicle - Technical - Engines</b>	
AURHTE2001	Remove and install heavy vehicle engine assemblies
<b>Mechanical - Light Vehicle - Technical - Steering and Suspension</b>	
AURLTD3006	Carry out wheel alignment operations (light vehicle)
<b>Mechanical - Light Vehicle - Technical - Engines</b>	
AURLTE2001	Remove and install light vehicle engine assemblies
<b>Mechanical - Light Vehicle - Technical - Wheels and Tyres</b>	
AURLTJ2001	Select tyres and rims for specific applications (light)
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)

Unit code	Unit title
AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies
<b>Mechanical - Light Vehicle – Technical - Transmission</b>	
AURLTX3001	Repair transmissions – manual (light vehicle)
AURLTX3002	Repair transmissions – automatic (light vehicle)
AURLTX3003	Diagnose and repair light vehicle clutch systems
<b>Mechanical - Light Vehicle - Technical - Emission and Exhaust</b>	
AURLTZ3001	Diagnose and repair light vehicle emission control systems
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2009	Carry out pre-repair operations (mechanical)
AURTTA3017	Carry out vehicle safety and roadworthy inspections
AURTTA3019	Carry out advanced diagnostic procedures
<b>Mechanical Miscellaneous – Technical - Brakes</b>	
AURTTB2003	Machine brake drums and brake disc rotors
AURTTB3005	Assemble and fit braking systems and components
AURTTB3006	Inspect, service and repair auxiliary braking systems
<b>Mechanical Miscellaneous - Technical - Cooling System</b>	
AURTTC3003	Diagnose and repair cooling systems
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>	
AURTTD2002	Inspect and service steering systems
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous – Technical – Fuel System</b>	
AURTTF2002	Service diesel fuel injection systems
AURTTF3005	Inspect and repair engine forced induction systems
AURTTF3006	Diagnose and repair petrol carburettor systems

Unit code	Unit title
<b>Mechanical Miscellaneous - Technical - Wheels and Tyres</b>	
AURTTJ2001	Balance wheels and tyres
<b>Mechanical Miscellaneous – Technical – Alternative Fuels</b>	
AURTTL3007	Service LPG fuel systems
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ2001	Service final drive assemblies
AURTTQ2003	Service final drive (driveline)
<b>Mechanical Miscellaneous - Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW2001	Carry out soft soldering techniques
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX2002	Inspect and service transmissions (manual)
AURTTX2003	Inspect and service transmissions (automatic)
AURTTX2004	Service transmissions (hydrostatic)
AURTTX3006	Repair transmissions (hydrostatic)
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2002	Repair exhaust system components
<b>Vehicle Body - Technical</b>	
AURVTA3004	Inspect vehicle systems and determine preferred repair action
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2002	Carry out brazing procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures
<b>Imported Units</b>	
RIIHAN301D	Operate elevating work platform

## Custom Content Section

Not applicable.

## AUR32012 Certificate III in Automotive Alternative Fuel Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30611 Certificate III in Automotive Specialist

## Description

This qualification covers the skills and knowledge required to install and repair alternative fuel systems and associated systems within the automotive service and repair sector.

### Job roles or employment outcomes

The Certificate III in Automotive Alternative Fuel Technology is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the automotive light or heavy vehicle service and repair sector.

Job outcomes targeted by this qualification include:

- automotive light vehicle repair technicians
- automotive heavy vehicle repair technicians

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed AUR20512 Certificate II in Automotive Servicing Technology, AUR20712 Certificate II in Automotive Vocational Preparation or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **23 units** of competency, consisting of:

- **11 core units**

plus

- **2 specialist elective units** in **one** of the selected specialist groups relating to occupational streams

plus

- **10 general elective units**, of which:

- up **10** elective units may be chosen from the elective units listed below
- up to **4** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3025	Test, charge and replace batteries
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA2004	Carry out servicing operations
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous - Technical - Cooling Systems</b>	
AURTTC2001	Inspect and service cooling systems
<b>Mechanical Miscellaneous - Technical - Engines</b>	

Unit code	Unit title
AURTTE2004	Inspect and service engines
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTTF2001	Service petrol fuel systems
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous - Technical - Emission and Exhaust</b>	
AURTTZ2001	Inspect and service emission control systems

**Specialist elective units****Group A: CNG**

Unit code	Unit title
<b>Mechanical Miscellaneous - Technical - Alternative Fuels</b>	
AURTTL3001	Service CNG fuel systems
AURTTL3002	Diagnose and repair CNG fuel systems

**Group B: LNG**

Unit code	Unit title
<b>Mechanical Miscellaneous - Technical - Alternative Fuels</b>	
AURTTL3004	Service LNG fuel systems
AURTTL3005	Diagnose and repair LNG fuel systems

**Group C: LPG**

Unit code	Unit title
<b>Mechanical Miscellaneous - Technical - Alternative Fuels</b>	

Unit code	Unit title
AURTTL3007	Service LPG fuel systems
AURTTL3008	Diagnose and repair LPG fuel systems

### General elective units

Unit Code	Unit Title
<b>Common – Sales and Marketing</b>	
AURACA2001	Establish relations with customers
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common - Technical</b>	
AURATA2002	Read and interpret engineering drawings
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2010	Fabricate, test and repair wiring harnesses and looms
AURETR3023	Diagnose and repair electronic spark ignition engine management systems
AURETR3031	Diagnose and repair ignition systems
AURETR3032	Repair electrical systems
<b>Mechanical - Heavy Vehicle - Technical - Alternative Fuels</b>	
AURHTL4001	Inspect, repair and diagnose alternative fuel systems for heavy vehicle engines
<b>Mechanical - Heavy Vehicle - Technical - Emission and Exhaust</b>	
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems
<b>Mechanical - Light Vehicle - Technical - Engines</b>	
AURLTE3002	Repair engines and associated engine components (light vehicle)

Unit Code	Unit Title
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTTF3004	Repair diesel fuel injection systems
AURTTTF3006	Diagnose and repair petrol carburettor systems
<b>Mechanical Miscellaneous - Technical - Alternative Fuels</b>	
AURTTL3003	Install CNG fuel systems
AURTTL3006	Install LNG fuel systems
AURTTL3009	Install LPG fuel systems
AURTTL3010	Install LPG, CNG and LNG electrical control equipment
<b>Mechanical Miscellaneous - Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW2001	Carry out soft soldering techniques
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2002	Carry out brazing procedures
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2004	Carry out gas tungsten arc welding procedures
AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

## Custom Content Section

Not applicable.

## AUR32112 Certificate III in Automotive Body Repair Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30805 Certificate III in Automotive Vehicle Body
Release 2	AUMABA3002 replaced by AUMAGA002 AUMGTY3002 replaced by AUMGTY002
Release 3	Updated imported elective units: RIIWH5204D replaces RIIOHS204A

### Description

This qualification covers the skills and knowledge required to repair and maintain the body of cars, heavy vehicles and other vehicles in the automotive industry.

#### Job roles and employment outcomes

The Certificate III in Automotive Body Repair Technology prepares new employees or recognises and develops existing workers who are repairing, maintaining and re-manufacturing the body of vehicles in the automotive industry.

Job roles related to this qualification include:

- vehicle body repair technician
- vehicle body restoration technician
- heavy vehicle body and chassis repair technician.

#### Application

This qualification is suitable for an Australian apprenticeship pathway.

## **Pathways Information**

### **Pathways into the qualification**

Credit will be granted towards this qualification to those who have completed AUR20912 Certificate II in Automotive Body Repair Technology or other relevant qualifications.

### **Pathways from the qualification**

Further training pathways from this qualification include AUR40712 Certificate IV in Automotive Body Repair Technology or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive body repair industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information and ideas with workplace colleagues, including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive body repair industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice and operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **30 units** of competency, consisting of:

- **16 core units**

plus

- **8 specialist elective units** in **one** of the selected specialist groups relating to occupational streams

plus

- **6 general elective units**, of which:
  - up to **6** elective units may be chosen from the elective units listed below
  - up to **5** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Foundation Skills</b>	
AURFA3008	Read and apply automotive repair instructions
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR3025	Test, charge and replace batteries
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous – Technical – Chassis and Frame</b>	
AURTTY3001	Repair chassis, frame and associated components
<b>Vehicle Body – Environment – Body</b>	
AURVEN3002	Monitor environmental and sustainability best practice in the automotive body repair industry
<b>Vehicle Body – Technical – Body</b>	

Unit code	Unit title
AURVTN2003	Carry out pre-repair vehicle body operations
AURVTN2004	Remove, replace and realign bolt-on panels, sections and fittings
AURVTN3016	Repair body panels incorporating filler
AURVTN3020	Replace major welded panels
AURVTN3022	Repair vehicle body misalignment
AURVTN3023	Remove and replace adhesive bonded panels and structures
AURVTN3035	Apply original equipment manufacturer repair procedures
AURVTN4032	Determine vehicle damage and recommended repair procedures
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2007	Conduct oxy-acetylene, thermal heating and cutting

### Specialist elective units

#### Group A: Vehicle Body Repair

Unit code	Unit title
<b>Vehicle Body – Technical</b>	
AURVTA3002	Remove and replace supplementary restraint systems
<b>Vehicle Body – Technical – Body</b>	
AURVTN2002	Carry out panel repairs
AURVTN2005	Remove and fit protector mouldings, transfers and decals
AURVTN3015	Repair body panels using metal finishing techniques
AURVTN3017	Repair body panels and thermoplastic components
AURVTN3018	Repair and replace structural damage by welding
AURVTN3019	Repair and replace structural damage by riveting

Unit code	Unit title
AURVTN3026	Repair aluminium body panels (finishing)
AURVTN3027	Repair aluminium body panels (filling)
AURVTN3028	Identify and repair high strength steel components
AURVTN3029	Set up and operate universal measuring systems
AURVTN3031	Conduct major sectional repairs
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW2005	Carry out spot welding procedures

**Group B: Vehicle Body Restoration**

Unit code	Unit title
<b>Mechanical Miscellaneous – Technical – Welding, Grinding, Machining and Soldering</b>	
AURTTW2001	Carry out soft soldering techniques
<b>Vehicle Body – Technical – Body</b>	
AURVTN3015	Repair body panels using metal finishing techniques
AURVTN3021	Repair body components using lead wiping
AURVTN3025	Repair corroded panels and components
<b>Vehicle Body – Technical – Fabrication</b>	
AURVTS2006	Carry out fabrication of components
AURVTS3001	Carry out wood working operations for fabrication
AURVTS3002	Repair plugs, moulds, frames and flooring using wood materials
AURVTS3003	Fabricate composite material components
AURVTS3005	Fabricate vehicle body panels and components
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW2004	Carry out gas tungsten arc welding procedures

Unit code	Unit title
<b>Imported Units</b>	
MEM05004C	Perform routine oxy acetylene welding

**Group C: Heavy Vehicle Body and Chassis Repair**

Unit code	Unit title
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA3020	Apply heat-induction processes
<b>Vehicle Body – Technical – Body</b>	
AURVTN3019	Repair and replace structural damage by riveting
AURVTN3026	Repair aluminium body panels (finishing)
AURVTN3029	Set up and operate universal measuring systems
<b>Vehicle Body – Technical – Paint</b>	
AURVTP3013	Prepare substrate for refinishing
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW2004	Carry out gas tungsten arc welding procedures
<b>Imported Units</b>	
AUMABA002	Operate load shifting equipment
AUMGTY002	Mount and install assembled components to chassis or frame
MEM24001B	Perform basic penetrant testing
RIIWHS204D	Work safely at heights

**General elective units**

Unit code	Unit title
<b>Common – Foundation Skills</b>	
AURAF2002	Read in an automotive workplace

Unit code	Unit title
AURAF2004	Solve routine problems in an automotive workplace
<b>Common – Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Electrical – Technical – Hybrid Vehicle and Battery Electric Vehicle</b>	
AURETH3001	Depower battery electric vehicles
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR2042	Remove, refit and test electrical componentry for operation following body repair activities
<b>Vehicle Body – Technical</b>	
AURVTA2001	Prepare vehicle, components and equipment for customer use
<b>Vehicle Body – Technical – Body</b>	
AURVTN2006	Remove and replace mechanical units and assemblies
AURVTN3013	Carry out paint-less dent repairs
<b>Vehicle Body – Technical – Paint</b>	
AURVTP2005	Apply rust prevention and sound deadening materials
<b>Vehicle Body – Technical – Fabrication</b>	
AURVTS3004	Repair fibreglass and composite material components
<b>Vehicle Body – Technical – Trimming and Upholstery</b>	
AURVTT2009	Remove and replace seats and internal fittings
AURVTT3021	Select and use adhesives
<b>Vehicle Body – Technical – Accessories</b>	
AURVTV2001	Remove, replace, fit and test components and accessories
<b>Imported Units</b>	

Unit code	Unit title
MEM18001C	Use hand tools
TAEDEL301A	Provide work skill instruction

## Custom Content Section

Not applicable.

## AUR32212 Certificate III in Automotive Glazing Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30805 Certificate III in Automotive Vehicle Body
Release 2	AURAEA2002 Typographical error corrected in title AUMGTG3002 Typographical error corrected in title
Release 3	AUMGTG3001 replaced by AUMGTG001
Release 4	Updated imported units: MSFGG2005 replaces LMFGG2005C MSFGG3001 replaces LMFGG3001C

## Description

This qualification covers the skills and knowledge required to remove, install, repair and manage auto glazing technical operations of cars and other vehicles within the automotive industry.

### Job roles and employment outcomes

The Certificate III in Automotive Glazing Technology is intended to prepare new employees or recognise and develop existing workers who are removing, installing and repairing windscreens and other glass items on vehicles in the automotive industry.

Job roles related to this qualification include:

- automotive glazing technician
- windscreen repair technician

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit will be granted towards this qualification to those who have completed AUR20912 Certificate II in Automotive Body Repair Technology or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40712 Certificate IV in Automotive Body Repair Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>explaining the processes used in auto glazing to customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and taking action</li> <li>determining which problems need priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **30 units** of competency consisting of:

- **18 core units**

plus

- **12 elective units** of which:

- up to **12** elective units may be chosen from the elective units listed below
- up to **5** elective units may be chosen from a Certificate II or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA2002	Apply environmental and sustainability best practice in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Common - Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common - Sales and Marketing</b>	
AURACA3003	Build customer relations
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Vehicle Body - Technical</b>	
AURVTA2001	Prepare vehicle, components and equipment for customer use
<b>Vehicle Body - Technical - Glazing</b>	
AURVTG2001	Repair laminated glass

Unit code	Unit title
AURVTG2002	Remove and install rubber glazed windscreens
AURVTG2004	Remove and install direct glazed windscreens
AURVTG2007	Clean glass surfaces
AURVTG3009	Remove and install fixed body glass
AURVTG3010	Remove and install movable body glass
AURVTG3012	Remove and install heavy vehicle rubber and urethane glazed windscreens
AURVTG3013	Remove and install large vehicle windscreens
<b>Vehicle Body - Technical – Body</b>	
AURVTN2011	Remove and install rear vision mirrors
<b>Imported Units</b>	
MSFGG2005	Apply basic glass handling
MSFGG3001	Store and handle glass

**Elective units**

Unit code	Unit title
<b>Common - Foundation Skills</b>	
AURAF2002	Read in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
<b>Common - Loss Assessment or Repair Quoting - Body</b>	
AURANN4001	Prepare a vehicle repair quotation
<b>Common - Technical</b>	
AURATA3005	Estimate complex jobs
<b>Electrical - Technical - Hybrid Vehicle and Battery Electrical Vehicle</b>	
AURETH3001	Depower battery electric vehicles

Unit code	Unit title
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR3025	Test, charge and replace batteries
<b>Sales and Parts, Administration and Management - Administration</b>	
AURSAA2001	Process customer complaints
<b>Sales and Parts, Administration and Management - Sales and Marketing</b>	
AURSCA2004	Carry out cash, credit and funds transfers
<b>Vehicle Body - Technical - Glazing</b>	
AURVTG2003	Remove and install butyl sealed windscreens
AURVTG2005	Remove and install framed type windscreens
AURVTG3008	Cut and process flat laminated glass
AURVTG3011	Install side windows
<b>Vehicle Body - Technical - Body</b>	
AURVTN3035	Apply original equipment manufacturer repair procedures
<b>Vehicle Body - Technical - Paint</b>	
AURVTP2002	Carry out masking procedures
<b>Vehicle Body - Technical - Trimming and Upholstery</b>	
AURVTT2007	Clean and finish plastic trim and fittings
AURVTT2008	Clean and finish vehicle interior trim and seats
<b>Imported Units</b>	
AUMGTG001	Install fixed and moveable glass components
BSBFLM312C	Contribute to team effectiveness
BSBWHS301A	Maintain workplace safety
BSBWOR301B	Organise personal work priorities and development

Unit code	Unit title
SIRXINV002A	Maintain and order stock
TAEDEL301A	Provide work skill instruction

## Custom Content Section

Not applicable.

## AUR32312 Certificate III in Automotive and Marine Trimming Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30805 Certificate III in Automotive Vehicle Body
Release 2	Unit AUMGTS3004 replaced by AUMGTS004
Release 3	Updated imported elective units: MSFUP3001 replaces LMFUP3001B

## Description

This qualification covers the skills and knowledge required in the manufacturing, repair and maintenance of trimming components to a range of motor vehicles, marine craft, recreational, canvas, camping and other vehicles within the automotive industry.

### Job roles and employment outcomes

The Certificate III in Automotive and Marine Trimming Technology will prepare new employees or recognise and develop existing workers who are manufacturing, repairing and maintaining trimming components to a range of motor vehicles, marine, aviation, recreational, canvas, camping and other vehicles within the industry.

Job roles related to this qualification include:

- Motor trimming technician
- Vehicle trimming technician
- Marine trimming technician

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit will be granted towards this qualification to those who have completed AUR20912 Certificate II in Automotive Body Repair Technology or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40712 Certificate IV in Automotive Body Repair Technology or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **30 units** of competency comprising of:

- **11 core units**

plus

- **19 elective units** of which:

- up to **19** elective units may be chosen from the elective units listed below
- up to **5** elective units may be chosen from the elective units listed below or from a Certificate II or above in this Training or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Mechanical Miscellaneous - Technical - Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Vehicle Body - Environment - Body</b>	
AURVEN3002	Monitor environmental and sustainability best practice in the automotive body repair industry
<b>Vehicle Body - Technical - Body</b>	
AURVTN3035	Apply original equipment manufacturer repair procedures
<b>Vehicle Body - Technical - Fabrication</b>	
AURVTS2006	Carry out fabrication of components
<b>Vehicle Body - Technical - Trimming and Upholstery</b>	
AURVTT2002	Carry out trim repairs and alterations
AURVTT2003	Remove and replace vehicle interior trim components

Unit code	Unit title
AURVTT2004	Trim vehicle components
AURVTT3012	Carry out sewing operations
AURVTT3021	Select and use adhesives

**Elective units**

Unit code	Unit title
<b>Common - Administration</b>	
AURAAA4002	Determine retail rates for work
<b>Common- Foundation Skills</b>	
AURAF2002	Read in an automotive workplace
<b>Common - Technical</b>	
AURATA3005	Estimate complex jobs
<b>Electrical - Technical - Hybrid Vehicle and Battery Electric Vehicle</b>	
AURETH3001	Depower battery electric vehicles
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles
<b>Electrical - Technical - Electrical and Electronics</b>	
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR3025	Test, charge and replace batteries
AURETR3026	Remove, replace and program electrical and electronic units and assemblies
<b>Vehicle Body - Technical</b>	
AURVTA3002	Remove and replace supplementary restraint systems
<b>Vehicle Body - Technical - Fabrication</b>	
AURVTS3004	Repair fibreglass and composite material components
<b>Vehicle Body - Technical - Trimming and Upholstery</b>	

Unit code	Unit title
AURVTT3010	Remove and replace vehicle head lining
AURVTT3013	Fabricate loose and fitted covers
AURVTT3014	Fabricate marine covers
AURVTT3015	Fabricate canvas products
AURVTT3017	Fabricate and install floor coverings
AURVTT3018	Fabricate and install soft top hoods
AURVTT3019	Fabricate and install canopies and curtains
AURVTT3020	Select and use leather in trimming
<b>Vehicle Body - Technical - Welding, Grinding, Machining and Soldering</b>	
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW3006	Carry out thermoplastic welding procedures
<b>Imported Units</b>	
AUMGTS004	Fabricate parts for sub-assemblies
MSFUP3001	Apply traditional foundations to upholstered furniture
TAEDEL301A	Provide work skill instruction

## Custom Content Section

Not applicable.

## AUR32412 Certificate III in Automotive Refinishing Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30805 Certificate III in Automotive Vehicle Body

### Description

This qualification covers the skills and knowledge required to paint, refinish, repair and maintain painted surfaces to a range of automotive vehicles, recreational vehicles and other vehicles within the automotive industry. This qualification may also cover non-automotive which may include industrial machinery and tools.

#### Job roles or employment outcomes

The Certificate III in Automotive Refinishing Technology is intended to prepare new employees or recognise and develop existing workers who are painting and maintaining painted surfaces on a range of vehicles and non-vehicle applications.

Job roles related to this qualification include:

- vehicle refinishing technician
- vehicle refinishing technician, heavy vehicle and industry

#### Application

This qualification is suitable for an Australian Apprenticeship pathway.

### Pathways Information

#### Pathways into the qualification

Credit will be granted towards this qualification to those who have completed AUR20912 Certificate II in Automotive Body Repair Technology or other relevant qualifications.

#### Pathways from the qualification

Further training pathways from this qualification include AUR40712 Certificate IV in Automotive Body Repair Technology or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive body repair industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive body repair industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **30 units** of competency consisting of:

- **17 core units**

plus

- **13 elective units** of which:

- up to **13** elective units may be chosen from the elective units listed below
- up to **5** elective units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Foundation Skills</b>	
AURFA3008	Read and apply automotive repair instructions
<b>Common - Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Vehicle Body – Environment - Body</b>	
AURVEN3002	Monitor environmental and sustainability best practice in the automotive body repair industry
<b>Vehicle Body – Technical - Paint</b>	
AURVTP2001	Apply paint removal methods
AURVTP2002	Carry out masking procedures
AURVTP2003	Prepare spray painting materials and equipment
AURVTP2004	Apply fundamental colour matching techniques
AURVTP2006	Prepare vehicle components for paint repairs
AURVTP3013	Prepare substrate for refinishing
AURVTP3014	Apply multi-layer and clear over-base colour matching techniques
AURVTP3015	Apply solid colour matching techniques

Unit code	Unit title
AURVTP3017	Carry out paint rectification and touch-up work for clear over base using two component systems
AURVTP3019	Prepare and paint plastic components
AURVTP3020	Carry out denibbing, buffing and polishing
AURVTP3023	Mix and apply clear over-base refinishing materials in two-component systems
AURVTP3024	Mix and apply clear over-base multi-layer pearl refinishing materials
AURVTP3025	Mix and apply water-based refinishing materials

**Elective Units**

Unit code	Unit title
<b>Common - Foundation Skills</b>	
AURAF2002	Read in an automotive workplace
AURAF2004	Solve routine problems in an automotive workplace
<b>Common – Management, Leadership and Supervision</b>	
AURAMA2001	Work effectively with others
<b>Electrical – Technical - Hybrid Vehicle and Battery Electric Vehicle</b>	
AURETH3001	Depower battery electric vehicles
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles
<b>Electrical – Technical – Electric and Electronic</b>	
AURETR3025	Test, charge and replace batteries
<b>Vehicle Body – Technical</b>	
AURVTA2001	Prepare vehicle, components and equipment for customer use
<b>Vehicle Body – Technical - Body</b>	
AURVTN2005	Remove and fit protector mouldings, transfers and decals

Unit code	Unit title
AURVTN3017	Repair body panels and thermoplastic components
AURVTN3035	Apply original equipment manufacturer repair procedures
AURVTN4032	Determine vehicle damage and recommended repair procedures
<b>Vehicle Body – Technical – Paint</b>	
AURVTP2007	Apply paint touch-up techniques
AURVTP2009	Apply vehicle body film wrapping
AURVTP2026	Carry out basic airbrush application techniques
AURVTP3010	Prepare spray booths and paint drying equipment
AURVTP3011	Apply solid acrylic enamel refinishing materials using two component systems
AURVTP3012	Apply air dry and polyurethane enamel refinishing materials
AURVTP3016	Carry out paint rectification and touch-up work for solids using two component systems
AURVTP3018	Carry out paint rectification for multi-layer and pearl using two component systems
<b>Imported Units</b>	
TAEDEL301A	Provide work skill instruction

## Custom Content Section

Not applicable.

## AUR32512 Certificate III in Automotive Underbody Technology

### Modification History

Release	Comment
Release 1	Replaces AUR30611 Certificate III in Automotive Specialist

## Description

This qualification covers the skills and knowledge required to perform a broad range of tasks on a variety of underbody systems within the automotive service and repair sector.

### Job roles and employment outcomes

The Certificate III in Automotive Underbody Technology is intended to prepare new employees or recognise and develop existing workers performing mechanical work in the automotive light vehicle service and repair sector.

Job outcomes targeted by this qualification include:

- automotive light vehicle underbody repair technicians.

### Application

This qualification is typically used to develop employees or recognise and develop existing workers who are performing vehicle service and repair functions in an automotive environment.

They would be expected to perform a range of mechanical operations involving known routines, methods and procedures and take some accountability for the quality of outcomes. This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit may be granted towards this qualification by those who have completed:

- AUR21212 Certificate II in Automotive Underbody Technology
- AUR21312 Certificate II in Automotive Braking System Technology
- AUR21612 Certificate II in Automotive Driveline System Technology
- AUR21712 Certificate II in Automotive Exhaust System Technology
- AUR21812 Certificate II in Automotive Steering and Suspension System Technology
- AUR21912 Certificate II in Automotive Tyre Servicing Technology, or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR40212 Certificate IV in Automotive Mechanical Diagnosis, AUR40812 Certificate IV in Automotive Mechanical Overhauling or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Understanding and carrying out verbal instructions from supervisors and others</li> <li>• Reading, understanding and completing workplace documentation, forms and records</li> <li>• Sharing work-related information with other team members using industry terminology</li> <li>• Communicating with people from a range of social, cultural and ethnic backgrounds</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• Contributing positively to the work team environment</li> <li>• Working effectively with others in a socially diverse environment</li> <li>• Respecting and understanding the views of others</li> <li>• Giving, receiving and acting upon feedback</li> <li>• Identifying and describing own role and role of others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• Recognising a problem or a potential problem within a vehicle component/system servicing environment</li> <li>• Seeking information and assistance to solve problems outside own area of responsibility</li> <li>• Solving problems within own area of responsibility</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• Suggesting ideas for workplace improvement to supervisors and team members</li> <li>• Positively adapting to changes in workplace procedures and making adjustments to improve own performance</li> <li>• Taking positive action to report hazards or risk situations to supervisors</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• Planning daily work tasks to work safely and manage risks according to workplace procedures</li> <li>• Prioritising activities to achieve required outcomes</li> <li>• Planning and organising appropriate equipment and materials</li> <li>• Planning ahead to anticipate problems with availability of equipment, materials and personnel to assist</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• Following workplace safety requirements and other policies and procedures</li> <li>• Completing known delegated tasks on time</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• Selecting and using appropriate equipment, materials, processes and procedures</li><li>• Asking for advice and assistance when appropriate</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Identifying personal strengths and weaknesses</li><li>• Acting upon feedback and accepting opportunities to learn to improve work performance</li><li>• Asking questions to gain information and identify sources of information to expand knowledge and understanding</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Appropriately selecting and using tools and equipment</li><li>• Recognising and reporting faulty equipment</li><li>• Using information and communication technology</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **28 units** of competency, consisting of:

- **13 core units**

plus

- **15 elective units**, of which:

- up to **15** elective units may be chosen from the elective units listed below
- up to **5** elective units may be chosen from a Certificate II qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for this qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA3003	Monitor environmental and sustainability best practice in the automotive mechanical industry
<b>Common – Health and Safety</b>	
AURASA2002	Apply safe working practices in an automotive workplace
<b>Mechanical –Light Vehicle – Brakes</b>	
AURLTB3003	Diagnose and repair light vehicle hydraulic braking systems
<b>Mechanical –Light Vehicle – Steering and Suspension</b>	
AURLTD3004	Repair steering systems (light vehicle)
AURLTD3005	Repair suspension systems (light vehicle)
<b>Mechanical –Vehicle – Tyres and Wheels</b>	
AURLTJ2001	Select tyres and rims for specific applications (light)
AURLTJ2002	Remove, inspect, repair and fit tyres and tubes (light)
AURLTJ2003	Remove, inspect, and refit light vehicle wheel assemblies
<b>Mechanical –Light Vehicle – Technical - Driveline and Final Drives</b>	
AURLTQ3002	Repair final drive – driveline (light vehicle)

Unit code	Unit title
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA3018	Carry out diagnostic procedures
<b>Mechanical Miscellaneous – Technical – Wheels and Tyres</b>	
AURTTJ2001	Balance wheels and tyres
<b>Mechanical Miscellaneous – Technical – Tools and Equipment</b>	
AURTTK2002	Use and maintain workplace tools and equipment
<b>Mechanical Miscellaneous – Technical – Emission and Exhaust</b>	
AURTTZ2002	Repair exhaust system components

**Elective units**

Unit Code	Unit Title
<b>Common – Foundation Skills</b>	
AURAF2003	Communicate effectively in an automotive workplace
<b>Common – Teamwork, Supervision and Management</b>	
AURAMA2001	Work effectively with others
<b>Electrical – Technical – Steering and Suspension</b>	
AURETD3001	Service and repair electronically controlled steering systems
<b>Electrical – Technical - - Electrical and Electronic</b>	
AURETR2012	Test and repair basic electrical circuits
AURETR3025	Test, charge and replace batteries
AURETR3036	Service and repair electronically controlled suspension systems
<b>Mechanical –Light Vehicle – Regulatory or Legal – Steering and Suspension</b>	
AURLLD3001	Determine compliance of steering and suspension modifications
<b>Mechanical –Light Vehicle – Technical – Steering and Suspension</b>	

AURLTD3003	Reset steering system alignment adjustments to customer specifications
AURLTD3006	Carry out wheel alignment operations (light vehicle)
<b>Mechanical –Light Vehicle – Technical - Wheels and Tyres</b>	
AURLTJ3004	Provide advice on the effects of wheel and tyre combinations
<b>Mechanical –Light Vehicle – Technical - Transmission</b>	
AURLTX3003	Diagnose and repair light vehicle clutch systems
<b>Mechanical Miscellaneous – Technical - Brakes</b>	
AURTTB2001	Inspect and service braking systems
AURTTB2002	Attach friction materials and radius grind
AURTTB2003	Machine brake drums and brake disc rotors
AURTTB3005	Assemble and fit braking systems and components
<b>Mechanical Miscellaneous – Technical – Steering and Suspension</b>	
AURTTD2002	Inspect and service steering systems
AURTTD2004	Inspect and service suspension systems
<b>Mechanical Miscellaneous – Technical – Wheels and Tyres</b>	
AURTTJ2002	Remove and refit wheel hubs and associated brake components
<b>Mechanical Miscellaneous – Technical – Driveline Final Drives</b>	
AURTTQ2003	Service final drive (driveline)
<b>Mechanical Miscellaneous – Technical – Fabrication</b>	
AURTTTS2001	Fabricate exhaust system and components
<b>Mechanical Miscellaneous – Technical - Transmission</b>	
AURTTX2005	Inspect and service clutch systems
<b>Vehicle Body – Technical – Welding, Grinding, Machining and Soldering</b>	
AURVTW2001	Carry out manual metal arc welding procedures
AURVTW2003	Carry out gas metal arc welding procedures

AURVTW2008	Carry out oxy acetylene welding, thermal cutting and thermal heating procedures
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## Custom Content Section

Not applicable.

## AUR40112 Certificate IV in Automotive Management

### Modification History

Release	Comment
Release 1	Replaces AUR40105 Certificate IV in Automotive Management

## Description

This qualification covers the skills and knowledge required to perform management roles in an automotive retail, service and repair environment.

### Job roles and employment outcomes

The Certificate IV in Automotive Management is intended to prepare new employees or recognise and develop existing workers who are performing management roles in the automotive retail, service and repair industry.

Job roles related to this qualification include:

- business manager
- sales manager
- customer service manager
- workplace manager
- parts manager

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit will be granted towards this qualification to those who have completed AUR30112 Certificate III in Automotive Administration, AUR31012 Certificate III in Automotive Sales or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification include AUR50112 Diploma of Automotive Management or other relevant qualifications.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>communicating with colleagues and customers to gather information about their needs</li> <li>listening to and following complex oral instructions</li> <li>reading, interpreting, writing and presenting reports</li> <li>writing clear and detailed instructions</li> <li>negotiating effectively</li> <li>reading, interpreting and questioning legal, financial and other business documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>working within own role to support team activities</li> <li>referring queries to colleagues</li> <li>identifying and using the strengths of other team members</li> <li>providing coaching, mentoring and feedback to other team members to develop skills and knowledge related to vehicle loss assessment</li> <li>working with vehicle repairers</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>finding, analysing and interpreting data</li> <li>determining appropriate strategies to complete tasks in a timely and efficient manner</li> <li>diagnosing customer issues and taking action to resolve them</li> <li>applying a range of problem-solving strategies</li> <li>seeking information from various sources to determine causes of problem</li> <li>using numerical skills to calculate costs and prices of vehicle systems and components</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>contributing to the strategic direction of the enterprise</li> <li>identifying learning opportunities to improve work practices</li> <li>evaluating tasks to improve efficiency</li> <li>suggesting improvements to the structure and design of existing systems</li> <li>developing innovative solutions to business challenges</li> <li>identifying business opportunities</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>organising loss assessment information</li> <li>organising resources, equipment and timelines</li> <li>planning for contingencies</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"> <li>• organising work schedules and meetings</li> <li>• developing operational procedures for the business</li> <li>• identifying performance measures for the business</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• evaluating own performance and identifying areas for improvement</li> <li>• managing time to independently complete tasks</li> <li>• planning and reviewing own work</li> <li>• using judgement and discretion with confidential information</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>• participating in professional networks and associations to obtain and maintain knowledge and skills</li> <li>• actively participating in coaching and mentoring sessions to improve standards of service provision</li> <li>• contributing to the learning of team members</li> <li>• seeking assistance and expert advice on financial, legal and/or technical aspects of the job</li> <li>• seeking out and learning new ideas, skills and techniques</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• keeping abreast of latest technology related to automotive management</li> <li>• using business technology to collect, analyse and provide information</li> <li>• applying business technology for communication, planning, financial management and operating the business</li> </ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **10 units** of competency, consisting of:

- **6 core units**

plus

- **4 elective units** of which:

- up to **4** elective units may be chosen from the elective units listed below
- up to **2** elective units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Sales and Marketing</b>	
AURACA3003	Build customer relations
<b>Common - Electrical</b>	
AURAEA4004	Manage environmental compliance in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA3004	Maintain business image
AURAMA4005	Manage complex customer issues
<b>Imported Units</b>	
BSBSMB407A	Manage a small team
BSBWHS401A	Implement and monitor WHS policies, procedures and programs to meet legislative requirements

### Elective units

Unit code	Unit title
<b>Common - Administration</b>	
AURAAA4002	Determine retail rates for work
<b>Common - Information Technology</b>	

Unit code	Unit title
AURAKA3002	Adapt work processes to new technologies
<b>Common - Regulatory or Legal</b>	
AURALA3001	Determine legal aspects of an automotive service and repair contract
<b>Common - Management, Leadership and Supervision</b>	
AURAMA3003	Conduct information sessions
<b>Common - Quality</b>	
AURAQA3003	Maintain quality systems
<b>Imported Units</b>	
BSBITS401B	Maintain business technology
BSBSMB406A	Manage small business finances
BSBWOR401A	Establish effective workplace relationships
BSBWOR404B	Develop work priorities
FNSASIC302C	Develop, present and negotiate client solutions
TAEDEL404A	Mentor in the workplace

## Custom Content Section

Not applicable.

## AUR40212 Certificate IV in Automotive Mechanical Diagnosis

### Modification History

Release	Comment
Release 1	Replaces AUR40208 Certificate IV in Automotive Technology

### Description

This qualification covers the skills and knowledge required to perform advanced diagnostic operations in the automotive retail, service and repair environment.

#### Job roles and employment outcomes

The Certificate IV in Automotive Mechanical Diagnosis provides advanced training for automotive technicians who want to further develop their diagnostic and technical skills. Job roles related to this qualification include:

- automotive lead or master technician
- automotive technical adviser.

#### Application

This qualification is suitable for an Australian apprenticeship pathway.

### Pathways Information

#### Pathways from the qualification

Further training pathways from this qualification include AUR50112 Diploma of Automotive Management, AUR50212 Diploma in Automotive Technology or other relevant qualifications.

### Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

Those undertaking Certificate IV in Automotive Mechanical Diagnosis are required to have completed an automotive mechanical Certificate III qualification or be able to demonstrate equivalent competency.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information and ideas with workplace colleagues, including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice and operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **10 units** of competency, consisting of:

- **1 core unit**

plus

- **9 elective units**, of which:

- up to **9** elective units may be chosen from the elective units listed below
- up to **2** elective units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA4021	Carry out diagnosis of complex system faults

### Elective units

Unit code	Unit title	Prerequisites
<b>Common – Environment</b>		
AURAEA4004	Manage environmental compliance in an automotive workplace	
<b>Electrical – Technical – Electrical and Electronic</b>		
AURETR3023	Diagnose and repair electronic spark ignition engine management systems	
AURETR3025	Test, charge and replace batteries	
AURETR4037	Diagnose complex electrical and electronic faults in light vehicle safety systems	
<b>Electrical – Technical – Hybrid Vehicle and Battery Electric Vehicle</b>		
AURETH3001	Depower battery electric vehicles	
AURETH3002	Service and maintain battery electric vehicles	AURETH3001

Unit code	Unit title	Prerequisites
AURETH4003	Test and repair high voltage battery systems in battery electric vehicles	AURETH3001 AURETR3025
AURETH4004	Diagnose and repair traction motor speed control device in battery electric vehicles	AURETH3001
AURETH4005	Diagnose and repair high voltage traction motors in battery electric vehicles	AURETH3001
AURETH4006	Diagnose and repair auxiliary motors and associated components in battery electric vehicles	AURETH3001
AURETH4007	Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles	AURETH3001
AURETH4008	Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles	AURETH3001
AURETH4009	Diagnose and repair DC to DC converters in battery electric vehicles	AURETH3001 AURETR3025
AURETH4010	Test high voltage batteries in hybrid electric vehicles	AURETR3025
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles	
AURETH4012	Service and maintain electrical components in hybrid electric vehicles	AURETH4011
<b>Electrical – Technical – Air Conditioning and HVAC</b>		
AURETU4006	Diagnose complex faults in air conditioning and HVAC systems	
<b>Mechanical – Heavy Vehicle – Technical – Brakes</b>		
AURHTB4006	Diagnose complex faults in heavy commercial vehicle braking systems	
<b>Mechanical – Heavy Vehicle – Technical – Steering and Suspension</b>		
AURHTD4006	Diagnose complex faults in heavy commercial vehicle steering and suspension	

Unit code	Unit title	Prerequisites
	systems	
<b>Mechanical – Heavy Vehicle – Technical – Engines</b>		
AURHTE4003	Diagnose complex faults in heavy vehicle diesel engines	
<b>Mechanical – Heavy Vehicle – Technical – Transmission</b>		
AURHTX4006	Diagnose complex faults in heavy commercial vehicle transmission and driveline systems	
<b>Mechanical – Motorcycle – Technical – Steering and Suspension</b>		
AURJTD4005	Diagnose complex faults in motorcycle steering and suspension systems	
<b>Mechanical – Motorcycle – Technical – Engines</b>		
AURJTE4002	Diagnose complex faults in motorcycle engine and transmission systems	
<b>Mechanical – Mobile Plant – Technical</b>		
AURKTA4009	Diagnose complex faults in mobile plant hydraulic systems	
<b>Mechanical – Mobile Plant – Technical – Brakes</b>		
AURKTB4003	Diagnose complex faults in mobile plant braking systems	
<b>Mechanical – Mobile Plant – Technical – Steering and Suspension</b>		
AURKTD4005	Diagnose complex faults in mobile plant steering and suspension systems	
<b>Mechanical – Mobile Plant – Technical – Transmission</b>		
AURKTX4003	Diagnose complex faults in mobile plant transmission systems	
<b>Mechanical – Light Vehicle – Technical – Brakes</b>		
AURLTB4004	Diagnose complex faults in light vehicle braking systems	

Unit code	Unit title	Prerequisites
<b>Mechanical – Light Vehicle – Technical – Steering and Suspension</b>		
AURLTD4009	Diagnose complex faults in light vehicle steering and suspension systems	
<b>Mechanical – Light Vehicle – Technical – Engines</b>		
AURLTE4004	Diagnose complex faults in light vehicle petrol engines	
AURLTE4005	Diagnose complex faults in light vehicle diesel engines	
<b>Mechanical – Light Vehicle – Technical – Fuel Systems</b>		
AURLTF3001	Diagnose and repair mechanical fuel injection systems	
<b>Mechanical – Light Vehicle – Technical – Driveline and Final Drives</b>		
AURLTQ3001	Repair final drive assemblies (light vehicle)	
AURLTQ3002	Repair final drive – driveline (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Transmission</b>		
AURLTX3001	Repair transmissions - manual (light vehicle)	
AURLTX4004	Diagnose complex faults in light vehicle transmission and driveline systems	
<b>Motorsport – Technical</b>		
AURMTA3007	Conduct non-destructive testing	
<b>Motorsport – Technical – Steering and Suspension</b>		
AURMTD4001	Test suspension dampers using a dynamometer	MEM30012A BSBRES401A
<b>Motorsport – Technical – Engines</b>		
AURMTE4001	Test engines using a dynamometer	
<b>Motorsport – Technical – Fuel Systems</b>		
AURMTF4001	Analyse and repair complex performance	AURETR3023 AURTTTF2001

Unit code	Unit title	Prerequisites
	carburetted fuel systems	AURLTF3001
AURMTF4002	Analyse and repair performance fuel injection systems	AURETR3023 AURTTTF2001 AURLTF3001
<b>Motorsport – Technical – Driveline and Final Drives</b>		
AURMTQ4001	Analyse and repair complex performance driveline systems	AURLTX3001 AURLTQ3001 AURLTQ3002 AURMTA3007
<b>Mechanical Miscellaneous – Technical</b>		
AURTTA4025	Diagnose complex faults in vehicle integrated stability control systems	
AURTTA4026	Diagnose complex faults in vehicle electric-over-hydraulic systems	
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>		
AURTTTF2001	Service petrol fuel systems	
<b>Mechanical Miscellaneous – Technical – Alternative Fuels</b>		
AURTTL4011	Diagnose complex faults in CNG fuel systems	
AURTTL4012	Diagnose complex faults in LNG fuel systems	
AURTTL4013	Diagnose complex faults in LPG fuel systems	
<b>Mechanical Miscellaneous – Technical – Electrical and Electronic</b>		
AURTTR4001	Diagnose complex faults in engine management systems	
<b>Imported Units</b>		
BSBRES401A	Analyse and present research information	
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	

## Custom Content Section

Not applicable.

## AUR40312 Certificate IV in Motorsport Technology

### Modification History

Release	Comment
Release 1	Replaces AUR40305 Certificate IV in Motorsport
Release 2	Prerequisites updated for AURMKA4001

### Description

This qualification covers the skills and knowledge required to perform the role of team leader and supervisor in a motorsport environment. It includes preparing competition vehicles, coordinating team operations, performing non-destructive testing, and supervising pit lane operations.

#### Job roles and employment outcomes

The Certificate IV in Motorsport Technology provides advanced training for those who perform technical and supervisory roles in motorsport.

Job roles related to this qualification include:

- master technician
- pit crew coordinator.

#### Application

This qualification is suitable for an Australian Apprenticeship pathway.

### Pathways Information

#### Pathways from the qualification

Further training pathways from this qualification include AUR50312 Diploma of Motorsport Technology, AUR50212 Diploma in Automotive Technology or other relevant qualifications.

### Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

Those undertaking Certificate IV in Motorsport Technology are required to have completed the automotive qualification AUR30912 Certificate III in Motorsport Technology or be able to demonstrate equivalent competency.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information and ideas with workplace colleagues, including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice and operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **10 units** of competency, consisting of:

- **1 core unit**

plus

- **9 elective units**, of which:

- up to **9** elective units may be chosen from the elective units listed below
- up to **2** elective units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Imported Unit</b>	
BSBWHS401A	Implement and monitor WHS policies, procedures and programs to meet legislative requirements

### Elective units

Unit code	Unit title	Pre requisites
<b>Electrical – Technical – Electrical and Electronic</b>		
AURETR2012	Test and repair basic electrical circuits	
AURETR3023	Diagnose and repair electronic spark ignition engine management systems	
<b>Mechanical – Light Vehicle – Technical – Steering and Suspension</b>		
AURLTD3005	Repair suspension systems (light vehicle)	
<b>Mechanical – Light Vehicle – Technical – Brakes</b>		
AURLTB4001	Overhaul braking system components (light)	
<b>Mechanical – Light Vehicle – Technical – Driveline and Final Drives</b>		
AURLTQ3001	Repair final drive assemblies (light vehicle)	

Unit code	Unit title	Pre requisites
AURLTQ3002	Repair final drive – driveline (light vehicle)	
<b>Mechanical – Light Vehicle – Technical - Transmission</b>		
AURLTX3001	Repair transmissions - manual (light vehicle)	
<b>Motorsport – Sales and Marketing</b>		
AURMCA5001	Manage motorsport team media liaison	
AURMCA5002	Manage motorsport team promotional partnerships and marketing	
<b>Motorsport</b>		
AURMGA4002	Manage personal presentation and development	
<b>Motorsport – Information Technology</b>		
AURMKA4001	Manage motorsport data	AURETR2012 AURMTA3009 MEM30012A
<b>Motorsport – Management, Leadership and Supervision</b>		
AURMMA4002	Manage the preparation of a competition vehicle	
AURMMA5003	Manage motorsport operations	
AURMMA5004	Manage motorsport team development	
AURMMA5005	Manage team pit lane and service area operations	AURMTA3005
AURMMA5006	Prepare and implement race strategies	
<b>Motorsport – Technical</b>		
AURMTA3007	Conduct non-destructive testing	
AURMTA3009	Collect and log motorsport data	
AURMTA5003	Determine material suitability for competition vehicle components	AURMTA3007 MEM30012A
AURMTA5008	Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles	AURMTD4002 AURMTJ4001 MEM30012A

Unit code	Unit title	Pre requisites
<b>Motorsport – Technical – Steering and Suspension</b>		
AURMTD4001	Test suspension dampers using a dynamometer	MEM30012A
AURMTD4002	Prepare competition vehicle suspension	AURLTD3005 AURTTD2004
<b>Motorsport – Technical – Engines</b>		
AURMTE4001	Test engines using a dynamometer	
<b>Motorsport – Technical – Fuel Systems</b>		
AURMTF4001	Analyse and repair complex performance carburetted fuel systems	AURTTF2001 AURTTF3006
AURMTF4002	Analyse and repair performance fuel injection systems	AURETR3023 AURTTF2001
<b>Motorsport – Technical – Wheels and Tyres</b>		
AURMTJ4001	Select and prepare tyres and wheels for motorsport applications	
<b>Motorsport – Technical – Driveline and Final Drives</b>		
AURMTQ4001	Analyse and repair complex performance driveline systems	AURLTQ3001 AURLTQ3002 AURLTX3001 AURMTA3007
<b>Mechanical Miscellaneous – Technical</b>		
AURTTA4021	Carry out diagnosis of complex system faults	
<b>Mechanical Miscellaneous – Technical – Steering and Suspension</b>		
AURTTD2004	Inspect and service suspension systems	
AURTTD4005	Overhaul steering system components	
<b>Mechanical Miscellaneous – Technical – Engines</b>		
AURTTE4005	Overhaul engines and associated engine components	
<b>Mechanical Miscellaneous – Technical – Fuel Systems</b>		

Unit code	Unit title	Pre requisites
AURTTTF2001	Service petrol fuel systems	
AURTTTF3006	Diagnose and repair petrol carburettor systems	
AURTTTF4007	Overhaul petrol fuel system components	
<b>Mechanical Miscellaneous – Technical – Driveline and Final Drives</b>		
AURTTQ4004	Overhaul final drive assemblies	
<b>Mechanical Miscellaneous – Technical – Transmission</b>		
AURTTX4007	Overhaul clutch assemblies	
AURTTX4008	Overhaul transmissions (manual)	
AURTTX4009	Overhaul transmissions (automatic)	
<b>Imported Units</b>		
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	

## Custom Content Section

Not applicable.

## AUR40412 Certificate IV in Automotive Performance Enhancement

### Modification History

Release	Comment
Release 1	Replaces AUR40405 Certificate IV in Automotive Performance Enhancement

### Description

This qualification covers the skills and knowledge required to analyse and repair complex performance driveline systems.

#### Job roles or employment outcomes

The Certificate IV in Automotive Performance Enhancement is intended to provide advanced training for automotive technicians who want to further develop their technical, diagnostic and repair skills.

Job outcomes targeted by this qualification include:

- master technician
- performance vehicle technician

#### Application

This qualification is suitable for an Australian apprenticeship pathway.

### Pathways Information

#### Pathways from the qualification

Further training pathways from this qualification include AUR50212 Diploma of Automotive Technology or other relevant qualifications.

### Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

Those undertaking Certificate IV in Automotive Performance Enhancement are required to have completed an automotive AUR30612 Certificate III in Light Vehicle Mechanical Technology or be able to demonstrate equivalent competency.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **10 units of competency, consisting of:**

- **3 core units** listed below

plus

- **7 elective units**, of which:
  - up to **7** elective units may be chosen from the elective units listed below
  - up to **2** elective units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title	Pre requisites
<b>Motorsport - Technical - Engines</b>		
AURMTE4001	Test engines using a dynamometer	
<b>Motorsport - Technical - Fuel Systems</b>		
AURMTF4002	Analyse and repair performance fuel injection systems	AURETR3023 AURTTF2001
<b>Mechanical Miscellaneous - Technical</b>		
AURTTA4021	Carry out diagnosis of complex system faults	

### Elective units

Unit code	Unit title	Pre requisites
<b>Administration - Foundation Skills</b>		
AURAF5006	Prepare technical reports	
AURAF5007	Develop and document specifications and procedures	
<b>Administration - Management, Leadership and Supervision</b>		
AURAMA5006	Contribute to business improvement	
<b>Electrical - Technical - Electrical and Electronic</b>		

AURETR3023	Diagnose and repair electronic spark ignition engine management systems	
AURETR5033	Develop and apply electronic systems modification	
AURETR5034	Develop and apply electrical systems modification	
<b>Mechanical - Light Vehicle - Technical - Brakes</b>		
AURLTB4001	Overhaul braking system components (light)	
<b>Mechanical - Light Vehicle - Technical – Steering and Suspension</b>		
AURLTD3005	Repair suspension systems (light vehicle)	
<b>Mechanical - Light Vehicle - Technical – Driveline and Final Drives</b>		
AURLTQ3001	Repair final drive assemblies (light vehicle)	
AURLTQ3002	Repair final drive – driveline (light vehicle)	
<b>Motorsport - Technical</b>		
AURMTA3007	Conduct non-destructive testing	
AURMTA5003	Determine material suitability for competition vehicle components	AURMTA3007 MEM30012A
AURMTA5008	Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles	AURMTD4002 AURMTJ4001 MEM30012A
<b>Mechanical - Light Vehicle - Technical – Transmission</b>		
AURLTX3001	Repair transmissions - manual (light vehicle)	
<b>Motorsport - Technical - Steering and Suspension</b>		
AURMTD4001	Test suspension dampers using a dynamometer	MEM30012A
AURMTD4002	Prepare competition vehicle suspension	AURLTD3005 AURTDD2004
<b>Motorsport - Technical - Fuel Systems</b>		
AURMTF4001	Analyse and repair complex performance carburetted fuel systems	AURTTF2001 AURTTF3006
<b>Motorsport - Technical - Wheels and Tyres</b>		

AURMTJ4001	Select and prepare tyres and wheels for motorsport applications	
<b>Motorsport - Technical - Driveline and Final Drives</b>		
AURMTQ4001	Analyse and repair complex performance driveline systems	AURLTQ3001 AURLTQ3002 AURLTX3001 AURMTA3007
<b>Mechanical Miscellaneous - Environment</b>		
AURTEA4001	Manage environmental compliance in the mechanical repair industry	
<b>Mechanical Miscellaneous - Loss Assessment or Repair Quoting</b>		
AURTNA5001	Estimate and calculate costs to repair, maintain or modify a vehicle	
<b>Mechanical Miscellaneous - Technical</b>		
AURTTA5022	Develop and apply mechanical system modifications	
AURTTA5023	Develop and apply hydraulic system modifications	
<b>Mechanical Miscellaneous - Technical - Steering and Suspension</b>		
AURTTD2004	Inspect and service suspension systems	
AURTTD4005	Overhaul steering system components	
<b>Mechanical Miscellaneous - Technical - Engines</b>		
AURTTE4005	Overhaul engines and associated engine components	
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>		
AURTTF2001	Service petrol fuel systems	
AURTTF3006	Diagnose and repair petrol carburettor systems	
AURTTF4007	Overhaul petrol fuel system components	
<b>Mechanical Miscellaneous - Technical - Alternative Fuels</b>		
AURTTL5015	Develop and apply gas fuel system modifications	
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>		

AURTTQ4004	Overhaul final drive assemblies	
<b>Mechanical Miscellaneous - Technical - Transmission</b>		
AURTTX4007	Overhaul clutch assemblies	
AURTTX4008	Overhaul transmissions (manual)	
AURTTX4009	Overhaul transmissions (automatic)	
<b>Imported Units</b>		
BSBWHS401A	Implement and monitor WHS policies, procedures and programs to meet legislative requirements	
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	

## Custom Content Section

Not applicable.

## AUR40612 Certificate IV in Automotive Electrical Technology

### Modification History

Release	Comment
Release 1	New qualifications

### Description

This qualification covers the skills and knowledge required to service, diagnose and repair electrical systems and components as a master diagnostic technician on vehicles in the automotive service and repair industry. A range of advanced electrical diagnostic skills and knowledge is necessary and leadership and supervision of others would be expected.

#### Job roles and employment outcomes

The Certificate IV in Automotive Electrical Technology is a post-trade level qualification in the automotive body repair industry.

It is designed for a master diagnostic technician and covers a range of specialised functions in the electrical repair industry.

Job roles related to this qualification include:

- automotive electrical workshop manager or service manager
- automotive workshop technical service adviser
- automotive master diagnostic technician.

#### Application

This qualification is suitable for an Australian apprenticeship pathway.

## **Pathways Information**

### **Pathways into the qualification**

Credit may be granted towards this qualification by those who have completed AUR30312 Certificate III in Automotive Electrical Technology in this Training Package or other relevant qualifications.

### **Pathways from the qualification**

Further training pathways from this qualification include AUR50112 Diploma of Automotive Management or other relevant qualifications.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## **Entry Requirements**

### **Entry requirements**

Those undertaking Certificate IV in Automotive Electrical Technology are required to have completed an automotive AUR30312 Certificate III in Automotive Electrical Technology or be able to demonstrate equivalent competency.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>• understanding input from specialist personnel and technical representatives</li> <li>• providing guidance to others and clearly describing faults, problems and repair requirements</li> <li>• negotiating with other team members or supervisors regarding timing and progress of work activities and access to equipment</li> <li>• understanding and interpreting regulations, procedures, instructions and repair manuals</li> <li>• interpreting wiring diagrams and system schematics, and reading drawings relating to repair activities</li> <li>• using computers to obtain technical data and complete documentation</li> <li>• articulating complex ideas clearly</li> <li>• interpreting a range of complex and technical documents</li> <li>• analysing and evaluating records, reports and reference materials</li> <li>• understanding relevant definitions, terminology, symbols and language</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• performing tasks as an individual while being responsive to supervisors and others</li> <li>• working effectively with others who may be of different ages, gender, race, religion and political persuasions</li> <li>• assisting other team members with tasks and providing advice on work processes and troubleshooting</li> <li>• seeking expert advice where appropriate</li> <li>• supporting team members in developing skills and knowledge</li> <li>• working in own role to support team activities</li> <li>• identifying and using the strengths of other team members</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• identifying problems in a timely manner and developing practical solutions to problems or faults not fully covered by technical data</li> <li>• responding to emergencies or accidents according to regulatory and organisational requirements</li> <li>• identifying possible solutions for improving environmental and resource-efficient work practices</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"> <li>• using mathematical techniques to relate diagnostic/test results to system or component performance and converting values between systems of measurement</li> <li>• finding, analysing and interpreting data that may be incomplete or have discrepancies</li> <li>• diagnosing customer service complaints and taking steps to improve the service</li> <li>• applying a range of problem-solving strategies</li> <li>• seeking information from various sources to determine the cause of the problem</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• adapting to new situations that arise as a consequence of regulatory changes, revised technical data, practices and procedures</li> <li>• varying work practices and behaviour as a result of performance feedback from peers and supervisors</li> <li>• adapting competencies to the performance of a wide range of repair tasks</li> <li>• contributing to a process of continuous improvement and a willingness to support and participate in the effective introduction of new work practices</li> <li>• identifying learning opportunities to improve work practices</li> <li>• evaluating tasks to improve efficiency</li> <li>• promoting environmental and resource-efficient work practices</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• clarifying task objectives and required outcomes through discussion with supervisors and other team members</li> <li>• collecting, analysing and organising information relating to assigned repair tasks and confirming the purpose and required work outcomes</li> <li>• identifying and organising equipment and material or resource requirements</li> <li>• planning for contingencies</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>• accepting responsibility for managing individual workload to meet target completion times or fit in with team milestones</li> <li>• evaluating own performance and identifying areas for improvement</li> <li>• managing time to independently complete tasks</li> <li>• planning and reviewing own work</li> <li>• using judgement and discretion with confidential information</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>• taking advantage of learning opportunities that arise internally and externally</li> <li>• adapting competencies to accommodate new ideas and techniques</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"><li>• using feedback from supervisors and peers to identify ways in which competence can be improved</li><li>• participating in professional networks and associations to obtain and maintain skills and knowledge</li><li>• seeking out and learning new ideas, skills and techniques</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using computers and microfiche to obtain technical and repair data</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **10 units** of competency, consisting of:

- **1 core unit**

plus

- **9 elective units**, of which:

- up to **9** elective units may be chosen from the elective units listed below
- up to **3** elective units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA4021	Carry out diagnosis of complex system faults

### Elective units

Unit code	Unit title	Prerequisite
<b>Common – Foundation Skills</b>		
AURAF5006	Prepare technical reports	
AURAF5007	Develop and document specifications and procedures	
<b>Common – Information Technology</b>		
AURAKA3002	Adapt work processes to new technologies	
<b>Common – Loss Assessment or Repair Quoting</b>		
AURANN4001	Prepare a vehicle repair quotation	
<b>Common – Quality</b>		
AURAQA3002	Inspect technical quality of work	
AURAQA3003	Maintain quality systems	
<b>Common – Technical</b>		

AURATA3004	Provide technical guidance	
AURATA3005	Estimate complex jobs	
<b>Electrical – Technical – Brakes</b>		
AURETB3001	Repair electric braking systems	
<b>Electrical – Technical – Hybrid Vehicle and Battery Electric Vehicle</b>		
AURETH3001	Depower battery electric vehicles	
AURETH3002	Service and maintain battery electric vehicles	AURETH3001
AURETH4003	Test and repair high voltage battery systems in battery electric vehicles	AURETH3001
AURETH4004	Diagnose and repair traction motor speed control device in battery electric vehicles	AURETH3001
AURETH4005	Diagnose and repair high voltage traction motors in battery electric vehicles	AURETH3001
AURETH4006	Diagnose and repair auxiliary motors and associated components in battery electric vehicles	AURETH3001
AURETH4007	Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles	AURETH3001
AURETH4008	Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles	AURETH3001
AURETH4009	Diagnose and repair DC to DC converters in battery electric vehicles	AURETH3001 AURETR3025
AURETH4010	Test high voltage batteries in hybrid electric vehicles	AURETR3025
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles	
AURETH4012	Service and maintain electrical components in hybrid electric vehicles	AURETH4011
AURETH4014	Diagnose complex faults in battery electric and hybrid electric vehicle systems	
<b>Electrical – Technical – Electrical and Electronic</b>		
AURETR2035	Demonstrate knowledge of petrol and diesel engine	

	operation	
AURETR3025	Test, charge and replace batteries	
AURETR4004	Diagnose complex electrical and electronic faults in vehicle convenience and entertainment systems	
AURETR4037	Diagnose complex electrical and electronic faults in light vehicle safety systems	
AURETR4038	Diagnose complex faults in motorcycle electrical and electronic systems	
AURETR4039	Diagnose complex electrical and electronic faults in light vehicle theft deterrent systems	
AURETR4040	Diagnose complex electrical and electronic faults in vehicle monitoring and protection systems	
AURETR5033	Develop and apply electronic systems modification	
AURETR5034	Develop and apply electrical systems modification	
<b>Electrical – Technical – Air Conditioning and HVAC</b>		
AURETU3004	Diagnose and repair air conditioning and HVAC systems	
AURETU3005	Retrofit and modify air conditioning and HVAC systems	
AURETU4006	Diagnose complex faults in air conditioning and HVAC systems	
AURETU4007	Overhaul air conditioning system components	
<b>Mechanical Miscellaneous – Environment</b>		
AURTEA4001	Manage environmental compliance in the mechanical repair industry	
<b>Mechanical Miscellaneous – Loss Assessment or Repair Quoting</b>		
AURTNA5001	Estimate and calculate costs to repair, maintain or modify a vehicle	
<b>Mechanical Miscellaneous – Technical</b>		
AURTTA4026	Diagnose complex faults in vehicle electric-over-hydraulic systems	

AURTTA3017	Carry out vehicle safety and roadworthy inspections	
<b>Mechanical Miscellaneous – Technical – Alternative Fuels</b>		
AURTTL3010	Install LPG, CNG and LNG electrical control equipment	
<b>Imported Units</b>		
BSBLED401A	Develop teams and individuals	
BSBINN301A	Promote innovation in a team environment	
BSBWHS401A	Implement and monitor WHS policies, procedures and programs to meet legislative requirements	
BSBWOR301B	Organise personal work priorities and development	
TAEDEL301A	Provide work skill instruction	
TAEDEL404A	Mentor in the workplace	

## Custom Content Section

Not applicable.

## AUR40712 Certificate IV in Automotive Body Repair Technology

### Modification History

Release	Comment
Release 1	New qualification
Release 2	Unit AUMAMM3001 replaced by AUMAMM001
Release 3	Updated imported units: AURNVA005 replaces AURNVA4005 AURVNA003 replaces AURVNA4003 AURVNA007 replaces AURVNA4007 AURVNA008 replaces AURVNA4008 AURVNN001 replaces AURVNN4001 AURVNP001 replaces AURVNP4001

### Description

This qualification covers the skills and knowledge to become a Master Technician within the automotive body repair and refinishing sector. The range of technical skills and knowledge is proficient and leadership and supervision of others is expected.

#### Job roles and employment outcomes

This qualification is a post-trade level qualification in the automotive body repair industry. It is designed for a Master Technician covering a range of specialised functions in the body repair industry.

- workshop manager or master technician
- workplace loss assessor adviser and or estimator
- workplace technical adviser for panel and paint
- group and team leader
- workplace supervisor
- customer service, internal and external

### Application

This qualification is suitable for an Australian apprenticeship pathway.

## Pathways Information

### Pathways from the qualification

Further training pathways from this qualification include AUR50112 Diploma of Automotive Management, or other relevant qualifications related to leadership and supervision.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

Those undertaking Certificate IV in Automotive Body Repair Technology are required to have completed an automotive Certificate III in one of the following disciplines, or be able to demonstrate equivalent competency.

- AUR32112 Certificate III in Automotive Body Repair Technology
- AUR32212 Certificate III in Automotive Glazing Technology
- AUR32312 Certificate III in Automotive and Marine Trimming Technology
- AUR32412 Certificate III in Automotive Refinishing Technology

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>communicating with colleagues and customers to gather information about their needs</li> <li>listening to and following complex oral instructions</li> <li>reading, interpreting, writing and presenting reports</li> <li>writing clear and detailed instructions</li> <li>negotiating effectively</li> <li>reading, interpreting and questioning legal, financial and other business documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>working within own role to support team activities</li> <li>referring queries to colleagues</li> <li>identifying and using the strengths of other team members</li> <li>providing coaching, mentoring and feedback to other team members to develop skills and knowledge related to vehicle loss assessment</li> <li>working with vehicle repairers</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>finding, analysing and interpreting data</li> <li>determining appropriate strategies to complete tasks in a timely and efficient manner</li> <li>diagnosing customer issues and taking action to resolve them</li> <li>applying a range of problem-solving strategies</li> <li>seeking information from various sources to determine causes of problem</li> <li>using numerical skills to calculate costs and prices of vehicle systems and components</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>contributing to the strategic direction of the enterprise</li> <li>identifying learning opportunities to improve work practices</li> <li>evaluating tasks to improve efficiency</li> <li>suggesting improvements to the structure and design of existing systems</li> <li>developing innovative solutions to business challenges</li> <li>identifying business opportunities</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>organising loss assessment information</li> <li>organising resources, equipment and timelines</li> <li>planning for contingencies</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the employability skills as identified by the automotive industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• organising work schedules and meetings</li><li>• developing operational procedures for the business</li><li>• identifying performance measures for the business</li></ul>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• evaluating own performance and identifying areas for improvement</li><li>• managing time to independently complete tasks</li><li>• planning and reviewing own work</li><li>• using judgement and discretion with confidential information</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• participating in professional networks and associations to obtain and maintain knowledge and skills</li><li>• actively participating in coaching and mentoring sessions to improve standards of service provision</li><li>• contributing to the learning of team members</li><li>• seeking assistance and expert advice on financial, legal and/or technical aspects of the job</li><li>• seeking out and learning new ideas, skills and techniques</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• keeping abreast of latest technology related to panel, paint, mechanical and electrical vehicle repair</li><li>• using business technology to collect, analyse and provide information</li><li>• applying business technology for communication, planning, financial management and operating the business</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **10 units** of competency, consisting of:

- **6 core units**

plus

- **4 elective units**, of which:

- up to **4** elective units may be chosen from the elective units listed below.
- up to **2** elective units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA4004	Manage environmental compliance in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA4005	Manage complex customer issues
<b>Common - Loss Assessment or Repair Quoting - Body</b>	
AURANN4001	Prepare a vehicle repair quotation
<b>Vehicle Body - Technical - Body</b>	
AURVTN3035	Apply original equipment manufacturer repair procedures
AURVTN4032	Determine vehicle damage and recommended repair procedures
<b>Imported Units</b>	
AURVNA005	Inspect quality of vehicle repair work

### Elective units

Unit code	Unit title
<b>Electrical - Technical - Hybrid Vehicle and Battery Electric Vehicle</b>	
AURETH3001	Depower battery electric vehicles

Unit code	Unit title
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles
<b>Vehicle Body - Technical</b>	
AURVTA3002	Remove and replace supplementary restraint systems
AURVTA3004	Inspect vehicle systems and determine preferred repair action
<b>Imported Units</b>	
AUMAMM001	Influence and lead work groups in an auto manufacturing environment
AURVNA003	Review vehicle repair quotations
AURVNA007	Apply automotive mechanical and electrical knowledge to vehicle loss assessments
AURVNA008	Apply automotive body and paint knowledge to vehicle loss assessments
AURVNN001	Evaluate vehicle bodywork for damage and identify repair requirements
AURVNP001	Evaluate vehicle paintwork for damage and identify refinish requirements
BSBREL402A	Build client relationships and business networks
BSBRKG304B	Maintain business records
BSBWHS401A	Implement and monitor WHS policies, procedures and programs to meet legislative requirements
BSBWOR401A	Establish effective workplace relationships
MSS403030A	Improve cost factors in work practices
PSPTRAN501A	Provide specialist vehicle technical advice
TAEDEL404A	Mentor in the workplace
TLIL4005A	Apply conflict/grievance resolution strategies

## Custom Content Section

Not applicable.

## AUR40812 Certificate IV in Automotive Mechanical Overhauling

### Modification History

Release	Comment
Release 1	Replaces AUR40208 Certificate IV in Automotive Technology

### Description

This qualification covers the skills and knowledge required to perform advanced troubleshooting and repair operations in an automotive retail, service and repair environment.

#### Job roles and employment outcomes

The Certificate IV in Automotive Mechanical Overhauling is intended to provide advanced training for automotive technicians who want to further develop their repair and technical skills.

Employment outcomes targeted by this qualification include:

- automotive lead/master technician

#### Application

This qualification is suitable for an Australian Apprenticeship pathway.

### Pathways Information

#### Pathways from the qualification

Further training pathways from this qualification include AUR50112 Diploma of Automotive Management and AUR50212 Diploma in Automotive Technology or other relevant qualifications.

### Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

Those undertaking Certificate IV in Automotive Mechanical Overhauling are required to have completed an automotive mechanical Certificate III qualification or be able to demonstrate equivalent competency.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **10 units** of competency, consisting of:

- **1 core unit**

plus

- **9 elective units**; of which:

- up to **9** elective units may be chosen from the elective units listed below
- up to **2** elective units may be chosen from a Certificate IV qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Mechanical Miscellaneous - Technical</b>	
AURTTA4021	Carry out diagnosis of complex system faults

### Elective units

Unit Code	Unit Title
<b>Electrical - Technical - Electrical and Electronic</b>	
AURETR3017	Overhaul charging system alternators
AURETR3018	Overhaul starting motors
<b>Electrical - Technical – Air Conditioning and HVAC</b>	
AURETU4007	Overhaul air conditioning system components
<b>Mechanical - Heavy Vehicle - Technical - Brakes</b>	
AURHTB4003	Overhaul braking system components (heavy)
AURHTB4004	Overhaul air braking systems and components
<b>Mechanical - Heavy Vehicle - Steering and Suspension</b>	
AURHTD3004	Carry out wheel alignment operations (heavy vehicle)

<b>Mechanical - Light Vehicle - Technical - Brakes</b>	
AURLTB4001	Overhaul braking system components (light)
<b>Mechanical - Light Vehicle - Technical - Steering and Suspension</b>	
AURLTD3006	Carry out wheel alignment operations (light vehicle)
<b>Motorsport - Technical</b>	
AURMTA3007	Conduct non-destructive testing
<b>Motorsport - Technical - Engines</b>	
AURMTE4001	Test engines using a dynamometer
<b>Outdoor Power Equipment - Technical - Engines</b>	
AURPTE4004	Overhaul engines and engine components (outdoor power equipment)
<b>Marine - Technical - Engines</b>	
AURRTE4011	Overhaul two and four cycle outboard engines
<b>Mechanical Miscellaneous – Technical – Steering and Suspension</b>	
AURTTD4005	Overhaul steering system components
<b>Mechanical Miscellaneous - Technical - Engines</b>	
AURTTE4005	Overhaul engines and associated engine components
<b>Mechanical Miscellaneous - Technical - Fuel Systems</b>	
AURTTF4003	Overhaul diesel fuel injection systems
AURTTF4007	Overhaul petrol fuel system components
<b>Mechanical Miscellaneous - Technical - Manufacture</b>	
AURTTM3001	Operate and monitor computer numerical control machines
AURTTM3002	Repair bearing tunnels and connecting rods in engines
AURTTM3003	Apply metal to rebuild engine components
AURTTM3004	Assemble engine blocks and sub-assemblies
AURTTM3005	Balance rotating and reciprocating engine components

AURTTM3006	Perform advanced machining and blueprinting of engine components
AURTTM3007	Carry out grinding operations
AURTTM3008	Dismantle and evaluate engine blocks and sub-assemblies
AURTTM3009	Fit sleeves and bore and hone engine cylinders
AURTTM3010	Heat treat, straighten and reclaim engine components
AURTTM3011	Recondition engine cylinder heads
<b>Mechanical Miscellaneous - Technical - Driveline and Final Drives</b>	
AURTTQ4004	Overhaul final drive assemblies
<b>Mechanical Miscellaneous - Technical - Welding, Grinding, Machining and Soldering</b>	
AURTTW3003	Carry out machining operations
<b>Mechanical Miscellaneous - Technical - Transmission</b>	
AURTTX4007	Overhaul clutch assemblies
AURTTX4008	Overhaul transmissions (manual)
AURTTX4009	Overhaul transmissions (automatic)
AURTTX4010	Overhaul transmissions (hydrostatic)

## Custom Content Section

Not applicable.

## AUR50112 Diploma of Automotive Management

### Modification History

Release	Comment
Release 1	Replaces AUR50105 Diploma of Automotive Management
Release 2	BSBHRM402A superseded by BSBHRM405A
Release 3	BSBCUS501A superseded by BSBCUS501C
Release 4	Updated imported units: BSBHRM505B replaces BSBHRM505A

## Description

This qualification covers the skills and knowledge required to undertake leadership and management roles within the automotive industry. It is suitable for entry into senior management roles in all sectors of the automotive industry.

### Job roles and employment outcomes

The Diploma of Automotive Business Management is intended to prepare new employees or recognise and develop existing workers who are performing management roles in the automotive industry.

Job outcomes targeted by this qualification include:

- business manager
- automotive directorship
- dealer principal
- operations manager
- sales manager
- area manager
- marketing manager
- retail manager
- parts manager
- purchasing manager
- automotive service manager
- automotive aftermarket manager
- automotive retail sales manager
- automotive warehouse manager
- automotive repair manager

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways into the qualification

Credit will be granted towards this qualification by those who have completed AUR40112 Certificate IV in Automotive Management or other relevant qualifications.

### Pathways from the qualification

Further training pathways from this qualification may lead to a relevant Advanced Diploma qualification.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements, depending on the work context. Local regulations should be checked for details.

## Entry Requirements

This qualification may be accessed by direct entry.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills for this qualification as identified by the automotive industry. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>Communicating with business contacts to promote the goals and objectives of the business</li> <li>Obtaining feedback from colleagues and clients</li> <li>Interpreting and completing business documentation</li> <li>Advising stakeholders of the outcome</li> <li>Communicating information about tasks, processes and events</li> <li>Communicating business and legal requirements, including workplace health and safety (WHS) responsibilities</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>Leading, planning and supervising the performance of team members</li> <li>Developing team cohesion and fostering innovative work practices</li> <li>Supporting, respecting and understanding the views of others</li> <li>Identifying own role and responsibility within a team</li> <li>Undertaking appropriate and effective communication with team members</li> <li>Building and maintaining networks and relationships</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>Accessing and assessing information for accuracy and relevance</li> <li>Evaluating and modifying as required</li> <li>Checking and making required adjustments</li> <li>Using knowledge to solve problems</li> <li>Using a wide range of strategies and techniques to solve problems</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>Identifying networking opportunities and developing operational strategies to ensure the viability of the business</li> <li>Instigating new or different work practices to improve productivity or service delivery</li> <li>Supporting a continuous improvement environment</li> <li>Identifying issues requiring action and recommending action</li> <li>Making adjustments to improve workplace processes and procedures</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>Allocating work to meet time and budget constraints</li> <li>Developing plans and schedules</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the Employability Skills for this qualification as identified by the automotive industry. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• Planning for and organising resources</li></ul>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• Prioritising tasks</li><li>• Operating within appropriate time constraints and work standards</li><li>• Demonstrating consistent performance</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• Participating in professional networks and associations to obtain and maintain personal knowledge and skills</li><li>• Systematically identifying learning and development needs</li><li>• Identifying sources of information to expand knowledge and understanding</li><li>• Recognising limits of own professional expertise and consulting specialists as necessary</li><li>• Accessing manufacturer's manuals/specifications to expand knowledge</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Using business technology to access, organise and monitor information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **12 units** of competency, consisting of:

- **6 core units**

plus

- **6 elective units** of which:

- up to **6** elective units may be chosen from the elective units listed below
- up to **2** elective units may be chosen from a Certificate IV qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common - Environment</b>	
AURAEA4004	Manage environmental compliance in an automotive workplace
<b>Common - Management, Leadership and Supervision</b>	
AURAMA4005	Manage complex customer issues
AURAMA5006	Contribute to business improvement
<b>Imported Units</b>	
BSBFIM501A	Manage budgets and financial plans
BSBMGT502B	Manage people performance
BSBWHS501A	Ensure a safe workplace

### Elective units

Unit code	Unit title
<b>Common - Administration</b>	
AURAAA4002	Determine retail rates of work
<b>Imported Units</b>	
BSBCUS501C	Manage quality customer service

BSBFIA401A	Prepare financial reports
BSBFRA403B	Manage relationship with franchisor
BSBHRM405A	Support the recruitment, selection and induction of staff
BSBHRM505B	Manage remuneration and employee benefits
BSBINN502A	Build and sustain an innovative work environment
BSBLED401A	Develop teams and individuals
BSBMGT515A	Manage operational plan
BSBMKG523A	Design and develop an integrated marketing communication plan
BSBPUR402B	Negotiate contracts
BSBWOR501B	Manage personal work priorities and professional development
BSBWOR502B	Ensure team effectiveness
SITXADM004A	Plan and manage meetings
TLIA4005A	Check and evaluate records and documentation
TLIA5058A	Manage facility and inventory requirements

## Custom Content Section

Not applicable.

## AUR50212 Diploma of Automotive Technology

### Modification History

Release	Comment
Release 1	Replaces AUR50205 Diploma of Automotive Technology

### Description

This qualification covers the skills and knowledge required to diagnose, analyse, evaluate, design and modify automotive electrical and mechanical systems. It is suitable for those working in the automotive service and repair industry at the forefront of the implementation of new technologies.

#### Job roles and employment outcomes

The Diploma of Automotive Technology prepares new employees or recognises and develops existing workers who are performing advanced diagnosis and design tasks in the automotive industry.

Job roles related to this qualification include:

- advanced diagnostic technician
- automotive system designer.

#### Application

This qualification is suitable for an Australian Apprenticeship pathway.

### Pathways Information

#### Pathways from the qualification

Further training pathways from this qualification may lead to a relevant Advanced Diploma qualification.

### Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

Those undertaking the Diploma of Automotive Technology are required to have completed AUR40212 Certificate IV in Automotive Mechanical Diagnosis or AUR40812 Certificate IV in Automotive Mechanical Overhauling or be able to demonstrate equivalent competency.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace verbal and non-verbal information and ideas with workplace colleagues, including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace-related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describing own role and role of others</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or potential problem and taking action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>selecting and using appropriate equipment, materials, processes and procedures</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
	<ul style="list-style-type: none"><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice and operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **12 units** of competency, consisting of:

- **1 core unit**

plus

- **11 elective units**, of which:
  - up to **11** elective units may be chosen from the elective units listed below
  - up to **2** elective units may be chosen from a Certificate IV qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

### Core units

Unit code	Unit title
<b>Common – Foundation Skills</b>	
AURAF5007	Develop and document specifications and procedures

### Elective units

Unit code	Unit title
<b>Common – Foundation Skills</b>	
AURAF5006	Prepare technical reports
<b>Electrical – Technical</b>	
AURETA5001	Analyse and evaluate electrical and electronic faults in electric over-hydraulic systems
AURETA5002	Analyse and evaluate electrical and electronic faults in safety systems
AURETA5003	Analyse and evaluate electrical and electronic faults in monitoring and protection systems
AURETA5004	Analyse and evaluate electrical and electronic faults in convenience and entertainment systems
AURETA5005	Analyse and evaluate electrical and electronic faults in theft-deterrent systems

AURETA5006	Analyse and evaluate electrical and electronic faults in climate-control systems
<b>Electrical – Technical – Brakes</b>	
AURETB5002	Analyse and evaluate electrical and electronic faults in braking systems
<b>Electrical – Technical – Steering and Suspension</b>	
AURETD5002	Analyse and evaluate electrical and electronic faults in stability, steering and suspension systems
<b>Electrical – Technical – Engines</b>	
AURETE5001	Analyse and evaluate electrical and electronic faults in engine management systems
<b>Electrical – Technical – Hybrid Vehicle and Battery Electric Vehicle</b>	
AURETH5013	Analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems
<b>Electrical – Technical – Electrical and Electronic</b>	
AURETR5033	Develop and apply electronic systems modification
AURETR5034	Develop and apply electrical systems modification
<b>Electrical – Technical – Transmission</b>	
AURETX5001	Analyse and evaluate electrical and electronic faults in transmission and driveline systems
<b>Mechanical – Heavy Vehicle – Technical – Brakes</b>	
AURHTB5005	Analyse and evaluate heavy vehicle braking system faults
<b>Mechanical – Heavy Vehicle – Technical – Steering and Suspension</b>	
AURHTD5005	Analyse and evaluate heavy vehicle steering and suspension system faults
<b>Mechanical – Heavy Vehicle – Technical – Engines</b>	
AURHTE5004	Analyse and evaluate heavy vehicle engine and fuel system faults
<b>Mechanical – Heavy Vehicle – Technical – Transmission</b>	
AURHTX5005	Analyse and evaluate heavy vehicle transmission system faults

<b>Mechanical – Motorcycle – Technical</b>	
AURJTA5003	Analyse and evaluate motorcycle engine and transmission system faults
<b>Mechanical – Motorcycle – Technical – Brakes</b>	
AURJTB5002	Analyse and evaluate motorcycle braking system faults
<b>Mechanical – Motorcycle – Technical – Steering and Suspension</b>	
AURJTD5006	Analyse and evaluate motorcycle steering, suspension and frame system faults
<b>Mechanical – Motorcycle – Technical – Electrical and Electronic</b>	
AURJTR5001	Analyse and evaluate motorcycle electrical and electronic system faults
<b>Mechanical – Plant and Heavy Equipment – Technical</b>	
AURKTA5006	Analyse and evaluate tracked mobile plant transmission, steering and braking systems faults
AURKTA5007	Analyse and evaluate mobile plant hydraulic system faults
<b>Mechanical – Mobile Plant – Technical – Brakes</b>	
AURKTB5002	Analyse and evaluate wheeled mobile plant braking system faults
<b>Mechanical – Mobile Plant – Technical – Steering and Suspension</b>	
AURKTD5003	Analyse and evaluate wheeled mobile plant steering and suspension system faults
AURKTD5004	Analyse and evaluate tracked mobile plant undercarriage and suspension system faults
<b>Mechanical – Mobile Plant – Technical – Engines</b>	
AURKTE5001	Analyse and evaluate mobile plant engine and fuel system faults
<b>Mechanical – Mobile Plant – Technical – Transmission</b>	
AURKTX5002	Analyse and evaluate wheeled mobile plant transmission system faults
<b>Mechanical – Light Vehicle – Technical – Brakes</b>	
AURLTB5002	Analyse and evaluate light vehicle braking system faults
<b>Mechanical – Light Vehicle – Technical – Steering and Suspension</b>	

AURLTD5007	Analyse and evaluate light vehicle steering and suspension system faults
<b>Mechanical – Light Vehicle – Technical – Engines</b>	
AURLTE5003	Analyse and evaluate light vehicle engine and fuel system faults
<b>Mechanical – Light Vehicle – Technical – Driveline and Final Drives</b>	
AURLTQ5003	Analyse and evaluate light vehicle driveline system faults
<b>Marine – Technical</b>	
AURRTA5007	Analyse and evaluate light marine hydraulic system faults
AURRTA5008	Analyse and evaluate light marine hull performance and stability system faults
<b>Marine – Technical – Engines</b>	
AURRTE5012	Analyse and evaluate light marine engine and powerhead system faults
<b>Marine – Technical – Transmission</b>	
AURRTX5005	Analyse and evaluate light marine transmission system faults
<b>Mechanical Miscellaneous – Loss Assessment or Repair Quoting</b>	
AURTNA5001	Estimate and calculate costs to repair, maintain or modify a vehicle
<b>Mechanical Miscellaneous – Technical</b>	
AURTTA5022	Develop and apply mechanical system modifications
AURTTA5023	Develop and apply hydraulic system modifications
AURTTA5024	Develop and apply pneumatic system modifications
<b>Mechanical Miscellaneous – Technical – Alternative Fuels</b>	
AURTTL5014	Analyse and evaluate gas fuel system faults
AURTTL5015	Develop and apply gas fuel system modifications
<b>Vehicle Body – Technical – Body</b>	
AURVTN5034	Evaluate and select bodywork materials, equipment and processes
<b>Imported Units</b>	

MSAENV472B	Implement and monitor environmentally sustainable work practices
MSAENV672B	Develop workplace policy and procedures for environmental sustainability

## Custom Content Section

Not applicable.

## AUR50312 Diploma of Motorsport Technology

### Modification History

Release	Comment
Release 1	Replaces AUR50305 Diploma of Motorsport
Release 2	Pre Requisites added to: AURMMA5005 AURMT5003 AURMTA5008

## Description

This qualification covers the skills and knowledge required to manage motorsport operational or technical teams. It is suitable for those working within the motorsport industry in a management role.

### Job roles and employment outcomes

The Diploma of Motorsport Technology is intended to develop new employees or recognise and develop existing workers who are working in management roles in the motorsport sector in the automotive industry.

Job outcomes targeted by this qualification include:

- advanced diagnostic technician
- motorsport team manager
- motorsport design technician.

### Application

This qualification is suitable for an Australian Apprenticeship pathway.

## Pathways Information

### Pathways from the qualification

Further training pathways from this qualification may lead to a relevant Advanced Diploma.

## Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, some units in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

## Entry Requirements

Entrants to this qualification are required to have completed AUR40312 Certificate IV in Motorsport Technology or be able to demonstrate equivalent competence.

## Employability Skills Summary

### EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
<b>Communication</b>	<ul style="list-style-type: none"> <li>clearly communicating workplace information and ideas with workplace colleagues (verbal and non-verbal), including use of automotive terms</li> <li>completing workplace reports</li> <li>using and contributing to workplace procedures</li> <li>maintaining workplace records</li> <li>communicating with colleagues and clients to handle verbal enquiries, such as clarifying instructions and responding to requests for information</li> <li>interpreting the needs of customers</li> <li>reading and interpreting workplace related documentation</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>identifying and describe own role and role of others</li> <li>working within a team</li> <li>working with diverse individuals and groups</li> <li>applying knowledge of own role to complete activities efficiently to support team activities and tasks</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>recognising a workplace problem or a potential problem and take action</li> <li>determining problems needing priority action</li> <li>referring problems outside area of responsibility to appropriate person and suggesting possible causes</li> <li>seeking information and assistance as required to solve problems</li> <li>using a range of problem-solving techniques</li> <li>taking action to resolve concerns</li> <li>developing practical responses to common breakdowns in workplace systems and procedures</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>adapting to new and emerging situations in the workplace</li> <li>being proactive and creative in responding to workplace problems, changes and challenges</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>planning own work requirements and prioritising actions to achieve required outcomes and ensure tasks are completed on time</li> <li>identifying risk factors and taking action to minimise risk</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

The following table contains a summary of the Employability Skills as identified by the automotive industry for this qualification. The Employability Skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Self-management</b>	<ul style="list-style-type: none"><li>• selecting and using appropriate equipment, materials, processes and procedures</li><li>• recognising limitations and seeking timely advice</li><li>• planning own work requirements, setting own work program and managing time to ensure tasks are completed on time</li><li>• following workplace documentation, such as codes of practice or operating procedures</li></ul>
<b>Learning</b>	<ul style="list-style-type: none"><li>• asking questions to gain information</li><li>• identifying sources of information, assistance and expert knowledge to expand knowledge, skills and understanding</li><li>• participating in self-improvement activities</li><li>• participating in development of workplace continuous improvement strategies</li><li>• helping others develop competency</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• operating diagnostic and test equipment</li><li>• performance testing of components, systems and equipment</li><li>• using tools and equipment efficiently and safely</li><li>• storing and caring for components, parts, tools, test equipment and support equipment</li><li>• using business technology to collect, analyse and provide information</li></ul>

## Packaging Rules

To be awarded this qualification, competency must be demonstrated in **9 units** of competency, consisting of:

- **3 core units** listed below

plus

- **6 elective units** of which;
  - up to **6** elective units may be chosen from the elective units listed below
  - up to **2** elective units may be chosen from a Certificate IV qualification or above in this Training Package, another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for this qualification.

### Core units

Unit code	Unit title
<b>Common - Management, Leadership and Supervision</b>	
AURAMA5006	Contribute to business improvement
<b>Motorsport - Management, Leadership and Supervision</b>	
AURMMA5003	Manage motorsport operations
AURMMA5004	Manage motorsport team development

### Elective units

Unit code	Unit Title	Pre-requisite
<b>Electrical - Technical - Brakes</b>		
AURETB5002	Analyse and evaluate electrical and electronic faults in stability, steering and suspension systems	
<b>Electrical - Technical - Engines</b>		
AURETE5001	Analyse and evaluate electrical and electronic faults in engine management systems	
<b>Electrical - Technical - Electrical and Electronic</b>		
AURETR5034	Develop and apply electrical systems modification	

<b>Electrical - Technical - Transmission</b>		
AURETX5001	Analyse and evaluate electrical and electronic faults in transmission and driveline systems	
<b>Mechanical - Light Vehicle - Technical - Brakes</b>		
AURLTB5002	Analyse and evaluate light vehicle braking system faults	
<b>Mechanical - Light Vehicle - Technical - Steering and Suspension</b>		
AURLTD5007	Analyse and evaluate light vehicle steering and suspension system faults	
<b>Mechanical - Light Vehicle - Technical - Engines</b>		
AURLTE5003	Analyse and evaluate light vehicle engine and fuel system faults	
<b>Mechanical - Light Vehicle - Technical - Driveline and Final Drives</b>		
AURLTQ5003	Analyse and evaluate light vehicle driveline system faults	
<b>Motorsport - Sales and Marketing</b>		
AURMCA5001	Manage motorsport team media liaison	
AURMCA5002	Manage motorsport team promotional partnership and marketing	
<b>Motorsport - Management, Leadership and Supervision</b>		
AURMMA5005	Manage team pit lane and service area operations	AURMTA3005
AURMMA5006	Prepare and implement race strategies	
<b>Motorsport - Technical</b>		
AURMTA5003	Determine material suitability for competition vehicle components	AURMTA3007 MEM30012A
AURMTA5008	Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles	AURMTD4002 AURMTJ4001
<b>Mechanical Miscellaneous - Technical</b>		
AURTTA5022	Develop and apply mechanical system modifications	
<b>Imported Units</b>		

BSBWHS401A	Implement and monitor WHS policies, procedures and programs to meet legislative requirements	
MSAENV672B	Develop workplace policy and procedures for environmental sustainability	

## Custom Content Section

Not applicable.

## AURSS00004 Automotive CNG Installation, Service and Repair Skill Set

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to or as part of:

- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology, or
- AUR31912 Certificate III in Elevating Work Platform Technology.
- 

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURTTL3001	Service CNG fuel systems
AURTTL3002	Diagnose and repair CNG fuel systems
AURTTL3003	Install CNG fuel systems

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to install, service and repair CNG systems and components in an automotive workplace.

This is a skill set covering the fundamental safety requirements for installation, service and repair of automotive CNG systems in the automotive retail, service and repair industry.

## **Suggested words for Statement of Attainment**

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to install, service and repair automotive CNG systems. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons installing, servicing and repairing automotive CNG systems.

## **Custom Content Section**

Not applicable.

## AURSS00005 Automotive CNG Service and Repair Skill Set

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to or as part of:

- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology, or
- AUR31912 Certificate III in Elevating Work Platform Technology.
- 

### Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **2 units of competency** must be completed.

Units	
AURTTTL3001	Service CNG fuel systems
AURTTTL3002	Diagnose and repair CNG fuel systems

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to service and repair CNG systems and components in an automotive workplace. This is a skill set covering the fundamental safety requirements for service and repair of automotive CNG systems in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to service and repair automotive CNG systems. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons servicing and repairing automotive CNG systems.

## Custom Content Section

Not applicable.

## AURSS00006 Automotive Electrical Skill Set for Light Vehicle Technicians

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to or as part of AUR30612 Certificate III in Light Vehicle Mechanical Technology qualification.

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **11 units of competency** must be completed.

Units	
AURETK2002	Use and maintain automotive electrical test equipment
AURETR2006	Carry out soldering of electrical wiring and circuits
AURETR2007	Demonstrate knowledge of automotive electrical circuits and wiring systems
AURETR2009	Install, test and repair vehicle lighting and wiring systems
AURETR2010	Fabricate, test and repair wiring harnesses and looms
AURETR2011	Install and test basic ancillary electrical components
AURETR2016	Read and apply vehicle wiring schematics and drawings
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
AURETR3028	Diagnose and repair instruments and warning systems
AURETR3032	Repair electrical systems
AURETR3043	Service and repair electronic body management systems

## Target Group

The skill set targets light vehicle mechanical technicians who require the skills and knowledge to enable them to diagnose and repair electrical faults in contemporary vehicles within an automotive workplace.

This is a skill set covering the requirements for light vehicle mechanical technicians to gain the required skills and knowledge to diagnose and repair electrical faults in contemporary vehicles within the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive light vehicle mechanical technicians that would be required to diagnose and repair electrical faults in contemporary vehicles within the Automotive industry. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by light vehicle mechanical technicians diagnosing and repairing electrical faults in contemporary vehicles within the Automotive industry.

## Custom Content Section

Not applicable.

## AURSS00007 Automotive LNG Installation, Service and Repair Skill Set

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to or as part of:

- AUR30312 Certificate III in Automotive Electrical Technology.
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology, or
- AUR31912 Certificate III in Elevating Work Platform Technology

### Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURTTTL3004	Service LNG fuel systems
AURTTTL3005	Diagnose and repair LNG fuel systems
AURTTTL3006	Install LNG fuel systems

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to install, service and repair LNG systems and components in an automotive workplace.

This is a skill set covering the fundamental safety requirements for installation, service and repair of automotive LNG systems in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to install, service and repair automotive LNG systems. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons installing, servicing and repairing automotive LNG systems.

## Custom Content Section

Not applicable.

## AURSS00008 Automotive LNG Service and Repair Skill Set

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to or as part of:

- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology, or
- AUR31912 Certificate III in Elevating Work Platform Technology.
- 

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **2 units of competency** must be completed.

Units	
AURTTL3004	Service LNG fuel systems
AURTTL3005	Diagnose and repair LNG fuel systems

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to service and repair LNG systems and components in an automotive workplace. This is a skill set covering the fundamental safety requirements for service and repair of automotive LNG systems in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to service and repair automotive LNG systems. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons servicing and repairing automotive LNG systems.

## Custom Content Section

Not applicable.

## AURSS00009 Automotive LPG Installation, Service and Repair Skill Set

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to or as part of:

- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology, or
- AUR31912 Certificate III in Elevating Work Platform Technology.
- 

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURTTL3007	Service LPG fuel systems
AURTTL3008	Diagnose and repair LPG fuel systems
AURTTL3009	Install LPG fuel systems

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to install, service and repair LPG systems and components in an automotive workplace.

This is a skill set covering the fundamental safety requirements for installation, service and repair of automotive LPG systems in the automotive retail, service and repair industry.

## **Suggested words for Statement of Attainment**

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to install, service and repair automotive LPG systems. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons installing, servicing and repairing automotive LPG systems.

## **Custom Content Section**

Not applicable.

## AURSS00010 Automotive LPG Service and Repair Skill Set

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to or as part of:

- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklifts Technology, or
- AUR31912 Certificate III in Elevating Work Platform Technology.
- 

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **2 units of competency** must be completed.

Units	
AURTTL3007	Service LPG fuel systems
AURTTL3008	Diagnose and repair LPG fuel systems

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to service and repair LPG systems and components in an automotive workplace. This is a skill set covering the fundamental safety requirements for service and repair of automotive LPG systems in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to service and repair automotive LPG systems. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons servicing and repairing automotive LPG systems.

## Custom Content Section

Not applicable.

# AURSS00011 Battery Electric Vehicle Diagnosis and Repair Skill Set

## Modification History

Release	Comment
Release 1	Replaces AUR05 Battery Electric Vehicle Diagnosis and Repair Skill Set Pathways Information updated Target Group updated Licensing statement updated
Release 2	Skill Set Requirements updated to include prerequisite units

## Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR30312 Certificate III in Automotive Electrical Technology, or as part of AUR40612 Certificate IV in Automotive Electrical Technology and AUR40212 Certificate IV in Automotive Mechanical Diagnosis.

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **7 units of competency** must be completed.

Units	
AURETH3001	Depower battery electric vehicles
AURETH4004	Diagnose and repair traction motor speed control device in battery electric vehicles
AURETH4005	Diagnose and repair high voltage traction motors in battery electric vehicles
AURETH4006	Diagnose and repair auxiliary motors and associated components in battery electric vehicles
AURETH4008	Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles
AURETH4009	Diagnose and repair DC to DC converters in battery electric vehicles
AURETR3025	Test, charge and replace batteries

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to diagnose and repair battery electric vehicle (BEV) systems and components in an automotive workplace.

This is a skill set covering the requirements for diagnosing and repairing BEVs in the automotive retail, service and repair industry.

## **Suggested words for Statement of Attainment**

These competencies from AUR12 Automotive Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to diagnose and repair battery electric vehicle systems and components. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons who diagnose, maintain and repair battery electric vehicles.

## **Custom Content Section**

Not applicable.

## AURSS00012 Battery Electric Vehicle Inspection and Servicing Skill Set

### Modification History

Release	Comment
Release 1	Replaces AUR05 Battery Electric Vehicle Inspection and Servicing Skill Set  Pathways Information updated  Target Group Updated  Licensing statement updated

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR30312 Certificate III in Automotive Electrical Technology, or as part of AUR40612 Certificate IV in Automotive Electrical Technology and AUR40212 Certificate IV in Automotive Mechanical Diagnosis.

### Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **4 units of competency** must be completed.

Units	
AURETH3001	Depower battery electric vehicles
AURETH3002	Service and maintain battery electric vehicles
AURETH4003	Test and repair high voltage battery systems in battery electric vehicles
AURETH4007	Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to inspect and service BEV systems and components in an automotive workplace. This is a skill set covering the fundamental safety requirements for inspecting and servicing battery electric vehicles (BEVs) in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to inspect and service battery electric vehicles. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons inspecting and servicing battery electric vehicles.

## Custom Content Section

Not applicable.

## AURSS00013 Heavy Commercial Vehicle Skill Set for Light Vehicle Technicians

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to or as part of AUR30612 Certificate III in Light Vehicle Mechanical Technology.

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **12 units of competency** must be completed.

Units	
AURETR3022	Diagnose and repair vehicle dynamic control systems
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
AURHTB3001	Repair air braking systems
AURHTD3002	Repair steering systems (heavy vehicle)
AURHTD3003	Repair suspension systems (heavy vehicle)
AURHTE3002	Repair engines and associated engine components (heavy vehicle)
AURHTQ3003	Repair final drive – driveline (heavy vehicle)
AURHTX3001	Repair transmissions – manual (heavy vehicle)
AURHTZ3001	Diagnose and repair heavy vehicle emission control systems
AURTTA2006	Service hydraulic systems
AURTTF2002	Service diesel fuel injection systems
AURTTF3005	Inspect and repair engine forced induction systems

## **Target Group**

The skill set targets and automotive Light Vehicle Technicians who require the skills and knowledge to diagnose and repair heavy commercial vehicles in the Road Transport industry. This is a skill set covering the fundamental requirements for Light Vehicle technicians to diagnose and repair heavy commercial vehicles in the Road Transport industry.

## **Suggested words for Statement of Attainment**

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive Light Vehicle technicians required to diagnose and repair Heavy Commercial Vehicles. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by Light Vehicle technicians diagnosing and repairing Heavy Commercial Vehicles.

## **Custom Content Section**

Not applicable.

## AURSS00014 Hybrid Electric Vehicle Inspection and Servicing Skill Set

### Modification History

Release	Comment
Release 1	Replaces AUR05 Hybrid Electric Vehicle Inspection and Servicing Skill Set Pathways Information updated Target Group updated Licensing statement updated
Release 2	Skill Set Requirements updated to include prerequisite units

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to AUR30612 Certificate III in Light Vehicle Mechanical Technology, AUR30312 Certificate III in Automotive Electrical Technology, or as part of AUR40612 Certificate IV in Automotive Electrical Technology and AUR40212 Certificate IV in Automotive Mechanical Diagnosis.

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **4 units of competency** must be completed.

Units	
AURETH4010	Test high voltage batteries in hybrid electric vehicles
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles
AURETH4012	Service and maintain electrical components in hybrid electric vehicles
AURETR3025	Test, charge and replace batteries

## Target Group

The skill set targets mechanics and automotive electricians who require the skills and knowledge to inspect and service hybrid electric vehicles (HEVs) systems and components in an automotive workplace.

This is a skill set covering the requirements for inspecting and servicing HEVs in the automotive retail, service and repair industry.

## **Suggested words for Statement of Attainment**

These competencies from AUR12 Automotive Retail, Service and Repair Training Package meet the needs of mechanics and automotive electricians required to inspect and service hybrid electric vehicles. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by persons inspecting and servicing hybrid electric vehicles.

## **Custom Content Section**

Not applicable.

## AURSS00015 Mobile Plant Skill Set for Agricultural Equipment Technicians

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to or as part of AUR30412 Certificate III in Agricultural Mechanical Technology.

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **7 units of competency** must be completed.

Units	
AURETR3024	Diagnose and repair electronic compression ignition engine management systems
AURKTA3005	Inspect, service and repair tracked type drive and support systems
AURKTD3002	Diagnose and repair mobile plant steering systems
AURKTQ3001	Diagnose and repair mobile plant final drive assemblies
AURTTA2006	Service hydraulic systems
AURTTF3005	Inspect and repair engine forced induction systems
AURTTX3006	Repair transmissions (hydrostatic)

## Target Group

The skill set targets and automotive Agricultural Equipment Technicians who require the skills and knowledge to diagnose and repair Mobile Plant Equipment in the Construction and Mining industries.

This is a skill set covering the fundamental requirements for Agricultural Equipment technicians to diagnose and repair mobile plant equipment in the Construction and Mining industries.

## **Suggested words for Statement of Attainment**

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive Agricultural Equipment technicians required to diagnose and repair Mobile Plant Equipment. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by Agricultural Equipment technicians diagnosing and repairing Mobile Plant Equipment.

## **Custom Content Section**

Not applicable.

## AURSS00016 Mobile Plant Skill Set for Heavy Commercial Vehicle Technicians

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to or as part of AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology.

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **8 units of competency** must be completed.

Units	
AURKTA3005	Inspect, service and repair tracked type drive and support systems
AURKTB3001	Diagnose and repair mobile plant braking systems
AURKTD3002	Diagnose and repair mobile plant steering systems
AURKTQ3001	Diagnose and repair mobile plant final drive assemblies
AURKTX3001	Diagnose and repair powershift transmissions
AURTTA3013	Repair hydraulic systems
AURTTF3004	Repair diesel fuel injection systems
AURTTX3006	Repair transmissions (hydrostatic)

## Target Group

The skill set targets and automotive Heavy Commercial Vehicle Technicians who require the skills and knowledge to diagnose and repair Mobile Plant Equipment in the Construction and Mining industries.

This is a skill set covering the fundamental requirements for Heavy Commercial Vehicle technicians to diagnose and repair mobile plant equipment in the Construction and Mining industries.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive Heavy Commercial Vehicle technicians required to diagnose and repair Mobile Plant Equipment. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by Heavy Commercial Vehicle technicians diagnosing and repairing Mobile Plant Equipment.

## Custom Content Section

Not applicable.

## AURSS00017 Mobile Plant Skill Set for Light Vehicle Technicians

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to or as part of AUR30612 Certificate III in Light Vehicle Mechanical Technology.

## Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **11 units of competency** must be completed.

Units	
AURHTE3002	Repair engines and associated engine components (heavy vehicle)
AURKTA3005	Inspect, service and repair tracked type drive and support systems
AURKTB3001	Diagnose and repair mobile plant braking systems
AURKTD3002	Diagnose and repair mobile plant steering systems
AURKTQ3001	Diagnose and repair mobile plant final drive assemblies
AURKTX3001	Diagnose and repair powershift transmissions
AURTTA2006	Service hydraulic systems
AURTTA3013	Repair hydraulic systems
AURTTF3004	Repair diesel fuel injection systems
AURTTF3005	Inspect and repair engine forced induction systems
AURTTX3006	Repair transmissions (hydrostatic)

## Target Group

The skill set targets and automotive Light Vehicle Technicians who require the skills and knowledge to diagnose and repair Mobile Plant Equipment in the Construction and Mining industries.

This is a skill set covering the fundamental requirements for Light Vehicle technicians to diagnose and repair mobile plant equipment in the Construction and Mining industries.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive Light Vehicle technicians required to diagnose and repair Mobile Plant Equipment. The units are drawn from endorsed Training Packages, and provide the skills and knowledge required by Light Vehicle technicians diagnosing and repairing Mobile Plant Equipment.

## Custom Content Section

Not applicable.

# AURSS00018 Vehicle Air Conditioning Install and Overhaul Skill Set

## Modification History

Release	Comment
Release 1	New skill set
Release 2	Pathways Information updated with new and existing qualifications

## Description

Not applicable.

## Pathways Information

The skill set may be undertaken in addition to, or as part of:

- AUR20212 Certificate II in Automotive Air Conditioning Technology
- AUR20412 Certificate II in Automotive Electrical Technology
- AUR21412 Certificate II in Automotive Cooling System Technology
- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology

## Licensing/Regulatory Information

This skill set also involves licencing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **2 units of competency** must be completed.

Units	
AURETU2001	Install air conditioning systems
AURETU4007	Overhaul air conditioning system components

## Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install and overhaul automotive air conditioning system components in an automotive workplace.

This is a skill set covering the requirements for installation and overhaul of vehicle air conditioning system components in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive mechanical and electrical technicians required to install and overhaul automotive air conditioning system components. These units are drawn from the Nationally endorsed Training Packages, and provide the skills and knowledge required by persons installing and overhauling automotive air conditioning system components.

## Custom Content Section

Not applicable.

## AURSS00019 Vehicle Air Conditioning Installation Skill Set

### Modification History

Release	Comment
Release 1	New skill set
Release 2	Pathways Information updated with new and existing qualifications

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to, or as part of:

- AUR20212 Certificate II in Automotive Air Conditioning Technology
- AUR20412 Certificate II in Automotive Electrical Technology
- AUR21412 Certificate II in Automotive Cooling System Technology
- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology

## Licensing/Regulatory Information

This skill set involves licensing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **1 unit of competency** must be completed.

Units	
AURETU2001	Install air conditioning systems

## Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install automotive air conditioning systems in an automotive workplace. This is a skill set covering the requirements for carrying out installation vehicle air conditioning systems in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

This competency from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive mechanical and electrical technicians required to install automotive air conditioning systems. The unit is drawn from Nationally endorsed Training Package, and provide the skills and knowledge required by persons to install automotive air conditioning systems.

## Custom Content Section

Not applicable.

## AURSS00020 Vehicle Air Conditioning Overhaul Skill Set

### Modification History

Release	Comment
Release 1	New skill set
Release 2	Pathways Information updated with new and existing qualifications

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to, or as part of:

- AUR20212 Certificate II in Automotive Air Conditioning Technology
- AUR20412 Certificate II in Automotive Electrical Technology
- AUR21412 Certificate II in Automotive Cooling System Technology
- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Automotive Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology

## Licensing/Regulatory Information

This skill set involves licensing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **1 unit of competency** must be completed.

Units	
AURETU4007	Overhaul air conditioning system components

## Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to overhaul automotive air conditioning system components in an automotive workplace.

This is a skill set covering the requirements for carrying out overhaul of vehicle air conditioning system components in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

This competency from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive mechanical and electrical technicians required to overhaul automotive air conditioning system components. The unit is drawn from a Nationally endorsed Training Package, and provides the skills and knowledge required by persons overhauling automotive air conditioning system components.

## Custom Content Section

Not applicable.

## AURSS00021 Vehicle Air Conditioning Service, Retrofit, and Repair Skill Set

### Modification History

Release	Comment
Release 1	New skill set
Release 2	Pathways Information updated with new and existing qualifications

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to, or as part of:

- AUR20212 Certificate II in Automotive Air Conditioning Technology
- AUR20412 Certificate II in Automotive Electrical Technology
- AUR21412 Certificate II in Automotive Cooling System Technology
- AUR30312 Certificate III in Automotive Electrical Technology
- AUR30412 Certificate III in Agricultural Mechanical Technology
- AUR30612 Certificate III in Light Vehicle Mechanical Technology
- AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31212 Certificate III in Mobile Plant Technology
- AUR31712 Certificate III in Forklift Technology

## Licensing/Regulatory Information

This skill set involves licensing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

## Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURETU2003	Service air conditioning and HVAC systems
AURETU3004	Diagnose and repair air conditioning and HVAC systems
AURETU3005	Retrofit and modify air conditioning and HVAC systems

## Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to service, retrofit, modify, diagnose and repair automotive air conditioning and HVAC systems in an automotive workplace.

This is a skill set covering the requirements for servicing, retrofitting and modification, diagnosis and repairs to vehicle air conditioning and HVAC systems in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive mechanical and electrical technicians required to service, retrofit, modify, diagnose and repair automotive air conditioning and HVAC systems. The units are drawn from Nationally endorsed Training Packages, and provide the skills and knowledge required by persons to service, retrofit, modify, diagnose and repair automotive air conditioning and HVAC systems.

## Custom Content Section

Not applicable.

## AURSS00022 Vehicle Refrigerant Recovery Skill Set

### Modification History

Release	Comment
Release 1	New skill set

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to or as part of an automotive qualification or as a stand alone skill set.

### Licensing/Regulatory Information

This skill set involves licensing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

### Skill Set Requirements

A total of **1 unit of competency** must be completed.

Units	
AURETU2002	Recover vehicle refrigerants

## Target Group

This skill set targets persons working in a automotive parts dismantlers / parts recycler's workplace or those working in the automotive industry that require the skills and knowledge to recover vehicle refrigerants from end of life vehicle's in an automotive workplace environment.

This is a skill set covering the requirements for recovering vehicle air conditioning refrigerants in the automotive retail, service and repair industry.

## Suggested words for Statement of Attainment

This competency from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of those employed within an automotive parts dismantlers / parts recyclers, vehicle wrecking yard. The units are drawn from Nationally endorsed Training Packages, and provide the skills and knowledge required by persons recovering vehicle air conditioning refrigerants.

## Custom Content Section

Not applicable.

## AURSS00023 Advanced Body Repair Skill Set

### Modification History

Release 1	New skill set
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### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to, or as part of:

- AUR32112 Certificate III in Automotive Body Repair Technology

### Licensing/Regulatory Information

This skill set also involves licencing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

### Skill Set Requirements

A total of 6 **units of competency** must be completed.

Units	
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles
AURVTA3002	Remove and replace supplementary restraint systems
AURVTN3023	Remove and replace adhesive bonded panels and structures
AURVTN3028	Identify and repair high strength steel components
AURVTN3029	Set up and operate universal measuring systems
AURVTN3035	Apply original equipment manufacturer repair procedures

## Target Group

The skill set targets automotive body repair technicians who require the skills and knowledge to conduct advanced body repairs.

This is a skill set covering the fundamental requirements for body repair technicians to conduct advanced body repairs.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive body repair technicians required to conduct advanced repairs. These units are drawn from the Nationally endorsed Training Packages, and provide the skills and knowledge required by automotive body repair technicians.

## Custom Content Section

Not applicable.

## AURSS00024 Advanced Body Repair Welding Skill Set

### Modification History

Not applicable.

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to, or as part of:

- AUR32112 Certificate III in Automotive Body Repair Technology.

### Licensing/Regulatory Information

This skill set also involves licencing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

### Skill Set Requirements

A total of 3 **units of competency** must be completed.

Units	
AURTTA3020	Apply heat-induction processes
AURVTW2003	Carry out gas metal arc welding procedures
AURVTW2005	Carry out spot welding procedures

### Target Group

The skill set targets automotive body repair technicians who require the skills and knowledge to conduct advanced body repairs.

This is a skill set covering the fundamental requirements for body repair technicians to conduct advanced body repair welding.

## **Suggested words for Statement of Attainment**

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive body repair technicians required to conduct advanced welding. These units are drawn from the Nationally endorsed Training Packages, and provide the skills and knowledge required by persons installing and overhauling body repair technicians.

## **Custom Content Section**

Not applicable.

## AURSS00025 Advanced Vehicle Refinishing Skill Set

### Modification History

Not applicable.

### Description

Not applicable.

### Pathways Information

The skill set may be undertaken in addition to, or as part of:

- AUR32412 Certificate III in Automotive Refinishing Technology

### Licensing/Regulatory Information

This skill set also involves licencing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

### Skill Set Requirements

A total of **5 units of competency** must be completed.

Units	
AURETH4011	Deactivate and reinitialise power supply in hybrid electric vehicles
AURVTN3035	Apply original equipment manufacturer repair procedures
AURVTP3018	Carry out paint rectification for multi-layer and pearl using two component systems
AURVTP3024	Mix and apply clear over-base multi-layer pearl refinishing materials
AURVTP3025	Mix and apply water-based refinishing materials

## Target Group

The skill set targets automotive refinishing technicians.

This is a skill set covering the fundamental requirements for automotive refinishing technicians to conduct advanced refinishing activities.

## Suggested words for Statement of Attainment

These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive refinishing technicians required to conduct advanced refinishing activities. These units are drawn from the Nationally endorsed Training Packages, and provide the skills and knowledge required by automotive refinishing technicians.

## Custom Content Section

Not applicable.

## AURAAA2001 Work in an automotive administration environment

### Modification History

Release	Comment
Release 1	Replaces AURA254280A Operate in an automotive administration environment Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to operate in an automotive administration environment. It includes determining a career path, meeting business expectations and employment requirements, managing daily work activities and contributing to the effective working of the team.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive business environment
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### Licensing/Regulatory Information

Not applicable

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine potential career path and develop individual goals	1.1. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work 1.2. Structure of the relevant automotive sector, including roles and functions of industry/association bodies, is identified 1.3. Personal skills are assessed to identify strengths and weaknesses 1.4. Business expectations are researched 1.5. Personal expectations are identified and goals determined 1.6. Potential career paths in automotive are researched and matched with personal goals 1.7. Training needs are identified and incorporated into career planning
2. Meet automotive administration employment requirements	2.1. Business organisational structure and individual roles and responsibilities are identified 2.2. Obligations to employers and others, including confidentiality requirements are complied with 2.3. Lines of communication and authority are identified and complied with 2.4. Work practices comply with legislation, regulations, codes of practice and team expectations, policies and procedures
3. Manage daily work activities	3.1. Own work role and responsibilities are identified and complied with 3.2. Lines of communication with supervisors, peers and external persons are identified and utilised 3.3. Individual tasks are identified, prioritised and completed within designated timeframes and business standards according to work schedule 3.4. Assistance is sought from appropriate persons when difficulties arise in achieving allocated tasks 3.5. Changes are made to workload or work priorities where unforeseen circumstances or developments occur 3.6. Own work is monitored and adjusted according to feedback obtained from supervisors and comparison with established business and workplace standards 3.7. Personal workspace is kept in a well organised and in a safe condition in accordance with workplace standards 3.8. Potentially discriminating and/or hazardous practices and policies are identified and reported to appropriate team persons

ELEMENT	PERFORMANCE CRITERIA
4. Contribute to a productive team environment	<ul style="list-style-type: none"><li>4.1.Information and knowledge relevant to work is shared with team members to ensure designated work goals are met</li><li>4.2.Personal work objectives are identified and prioritised in accordance with team requirements</li><li>4.3.Constructive feedback received from other team persons is encouraged, acknowledged and acted upon</li><li>4.4.Variations in the quality of components and/or work practices from team standards are detected and reported to appropriate team persons in accordance with team procedures</li><li>4.5.Assistance is actively sought from or provided to other persons when difficulties arise</li><li>4.6.Communication techniques are used to gather and understand relevant instructions</li><li>4.7.Signs of potential interpersonal conflict are identified, constructively acted upon and/or referred to a supervisor where appropriate</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to automotive administration, including roles and responsibilities, WHS requirements and potential career paths
- communicate ideas and information to enable articulation of personal goals and career choices, and information to team members in the workplace
- plan and organise activities, including equipment and resources to avoid backtracking, workflow interruptions or wastage
- work with others and in a team using cooperative approaches to optimise work practices and contribute to a productive team environment
- use mathematical ideas and techniques to interpret work instructions and complete specified tasks
- use problem-solving techniques to develop solutions to unpredicted situations, clarify work instructions where necessary, and resolve conflict
- use workplace technology related to measurement, including tools, equipment, calculators and measuring devices

#### Required knowledge

- structure of relevant sector of automotive industry
- roles of the industry associations and regulatory bodies
- roles and responsibilities of trainees
- source of information related to contract to train, including NAC and RTO
- authority and communication lines within automotive businesses
- work ethic and business expectations, including personal attitudes needed
- appropriate automotive terminology used to assist work performance
- goal setting methods and techniques
- communication principles and techniques
- conflict resolution principles and techniques

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret and apply business requirements
- Correctly apply and use safety equipment and personal protective equipment
- Follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage to equipment or documents
  - achieve required outcomes within business time and quality standards
  - produce a career plan which covers:
    - personal goals and expectations
    - opportunities
    - timeframes and personal development needs
- Work with and around other team members
- Work effectively with others
- Modify activities to cater for variations in workplace context and environment.

##### Context of and specific resources for assessment

- Assessment may occur on the job or in a workplace simulated facility with relevant stationery, office tools and equipment.
- Assessment of this unit of competence may include project related tasks and require portfolios or other forms of indirect evidence of process.
- Access to standard business policies and procedures related to job descriptions, WHS policy, authority and communication lines, as identified in the Range Statement.
- Personal protective equipment and information and procedures as identified in the Range Statement and a work environment.

##### Method of assessment

- Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts.
- Assessment should be by direct observation of tasks and questioning on underpinning knowledge.
- Assessment should be conducted over time and may be in conjunction with assessment of other units of competence.

##### Guidance information for

**EVIDENCE GUIDE****assessment**

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Business types</b>	Businesses may include but are not limited to those related to mechanical repairers, body repairers, vehicle sales, bicycle workshops, marine repairers, parts and aftermarket sales
<b>Business expectations</b>	<p>Business expectations include standards of:</p> <ul style="list-style-type: none"> <li>• dress, personal presentation, preparedness and personal conduct (including respect for the rights and responsibilities of others)</li> <li>• quality and timeframe of work and the role of excellence and innovation</li> <li>• knowledge of tools and equipment and specific work area functions</li> <li>• commitment, responsibility and preparedness for work, including working flexible hours to meet deadlines</li> <li>• confidentiality and ethical work practices</li> <li>• contribution to the overall effectiveness of the business</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• business policies and procedures relating to use of work areas, authorities and lines of communication</li> <li>• instructions, including worksheets, checklists and plans</li> <li>• procedures relating to reporting and communication</li> <li>• procedures relating to the use of tools and equipment</li> <li>• manufacturer/component supplier specifications and application procedures for materials, tools and equipment</li> <li>• WHS requirements include safety management systems, and safe operating procedures</li> <li>• work is carried out in accordance with legislative obligations, including environmental requirements, relevant health regulations, manual handling procedures and insurance requirements</li> <li>• industry code of ethics</li> <li>• relevant legislation related to trade practices, sale of goods, vehicle registration and privacy</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Administration
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Common
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## AURAAA4002 Determine retail rates for work

### Modification History

Release	Comment
Release 1	Replaces AURA454516A Determine retail rates for work Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to calculate fixed and variable costs to determine retail rates for jobs performed. It also involves calculating the effects of discount on overall profitability.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit is applicable to the administration and repair sectors of the automotive industry. It includes:</p> <ul style="list-style-type: none"><li>• work undertaken in-house</li><li>• work involving subcontracting</li><li>• costing of purchased parts for sale.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine fixed costs	<ul style="list-style-type: none"><li>1.1. Identify components of fixed costs</li><li>1.2. Use historical records and business knowledge to estimate fixed costs for next period</li><li>1.3. Calculate administrative and business operation overhead costs</li><li>1.4. Allocate proportion of fixed cost to be included in labour rate</li></ul>
2. Determine labour rate	<ul style="list-style-type: none"><li>2.1. Identify cost components of labour rate</li><li>2.2. Using historical records identify average chargeable hours of each category of staff</li><li>2.3. Calculate subcontractor cost component of jobs</li><li>2.4. Calculate applicable hourly retail rate for labour, including provision for fixed costs</li></ul>
3. Determine variable cost	<ul style="list-style-type: none"><li>3.1. Identify components of variable cost for job</li><li>3.2. Estimate and record materials required for the job</li><li>3.3. Use accounting records and details of job undertaken to calculate variable cost</li></ul>
4. Determine retail price of goods for resale	<ul style="list-style-type: none"><li>4.1. Research local market price for items</li><li>4.2. Estimate turnover volume of items</li><li>4.3. Calculate margins and mark-ups for each category of goods</li><li>4.4. Calculate effect of various discounts, loss leaders and specials on items based on retail price, volume and overall business flow-on</li><li>4.5. Calculate effect of high pricing strategy on some items</li><li>4.6. Monitor effects of price changes on business levels and profitability</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to determining retail rates
- communicate ideas and information to establish appropriate retail rates for work
- plan and organise activities to comply with requirements for determining business retail rates
- work with others and in a team to allocate charges
- use mathematical ideas and techniques to support the business operation
- solve problems to establish business
- use workplace technology to optimise performance

#### Required knowledge

- basic mathematical concepts, addition, subtraction, percentages and fractions

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>Calculate cost for a range of retail service and repair jobs, including fixed, variable and component pricing.</li> <li>Determine effect of price changes on overall business profitability.</li> <li>Gathering cost estimates from external service providers and documenting quotations.</li> </ul>
<b>Context of and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>Accounts payable and cash disbursement records, payroll records, equipment cost and asset register, pricing impact charts, stock turnover records, calculator or computer.</li> </ul>
<b>Method of assessment</b>	<p>Practical assessments:</p> <ul style="list-style-type: none"> <li>determine hourly charge-out rate for classes of labour using proportion of fixed, variable and labour cost</li> <li>determine on-cost for parts and components</li> <li>determine effect of change in price on business profitability.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
<b>Calculations</b>	<p>Calculation will include:</p> <ul style="list-style-type: none"> <li>overheads may be calculated for a specific job or be a constant</li> </ul>

**RANGE STATEMENT**

	<p>component based on historical records and projections</p> <ul style="list-style-type: none"> <li>• overheads will include accommodation costs, utilities, depreciation, insurance, licence and other business charges</li> <li>• labour costs will include on-costs, such as leave provision, superannuation, training and workers' compensation</li> <li>• chargeable hours/productive hours based on total hours worked less acknowledged non-chargeable hours</li> </ul>
<b>Work requirements</b>	<p>Work requirements may include:</p> <ul style="list-style-type: none"> <li>• written and verbal communication</li> <li>• sourcing and costing parts and consumables</li> <li>• estimating costs</li> <li>• documentation</li> <li>• specific requirements</li> </ul>
<b>External service providers</b>	<p>External service providers may be:</p> <ul style="list-style-type: none"> <li>• other departments</li> <li>• specialist businesses</li> </ul>
<b>Resources</b>	<p>Resources may include:</p> <ul style="list-style-type: none"> <li>• enterprise stationery, telephone and appropriate forms/business documents</li> <li>• repair order and job cards</li> <li>• component price lists</li> <li>• accounting records</li> <li>• purchasing records</li> <li>• computer, calculator and software</li> <li>• standard repair times</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• manufacturer/component supplier specifications</li> <li>• enterprise operating procedures</li> <li>• customer requirements</li> <li>• state/territory/industry Workplace Health and Safety (WHS) legislation</li> <li>• industry/workplace codes of practice</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Administration
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Common
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## AURACA2001 Establish relations with customers

### Modification History

Release	Comment
Release 1	Replaces AURC270421A Establish relations with customers Unit code updated to meet policy requirements. Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to establish effective relations with customers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair</li></ul>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish contact with customer	<ul style="list-style-type: none"><li>1.1.A welcoming customer environment is maintained</li><li>1.2.Customer is greeted warmly according to enterprise policies and procedures</li><li>1.3.An effective service environment is created through verbal and non-verbal presentation according to enterprise policies and procedures</li></ul>
2. Clarify specific needs of a customer	<ul style="list-style-type: none"><li>2.1.Customer needs are determined through questioning and active listening</li><li>2.2.Customer needs are accurately assessed against the products/services of the enterprise</li><li>2.3.Customer details are documented clearly and accurately in required format</li></ul>
3. Provide information and advice	<ul style="list-style-type: none"><li>3.1.Features and benefits of products/services provided by the enterprise are described/recommended to meet customer needs</li><li>3.2.Information to satisfy customer needs is provided</li><li>3.3.Alternative sources of information/advice are discussed with the customer</li><li>3.4.Alternatives are followed up</li></ul>
4. Follow up customer needs	<ul style="list-style-type: none"><li>4.1.Further information is dispatched to customer</li><li>4.2.Gaps in available information are identified and referred to relevant persons for action</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to specific needs of customers being identified
- operational skills and techniques in questioning/listening, resolving conflict, following set routines and procedures, handling difficult or abusive customers and greeting/farewelling techniques
- literacy skills in regard to message-taking in person or by telephone and completing written or computer documents of customer details
- plan and organise activities for implementation of a customer service plan
- work with others and in a team by team members with specific skills being sought to meet customer needs
- use mathematical ideas and techniques for customer timeframes being identified and followed
- establish diagnostic processes in which a logical approach to issues is followed
- use workplace technology related to technical skills in operating enterprise telephone systems and other communication equipment

#### Required knowledge

General knowledge of

- enterprise policies and procedures in regard to:
  - customer service
  - dealing with difficult customers
  - allocated duties/responsibilities
- the range of enterprise merchandise and services, location of telephone extensions and departments/sections
- legislation and statutory requirements, including consumer law, trade practices and fair trading legislation
- industry/workplace codes of practice in relation to customer service

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- consistently applying enterprise policies and procedures and industry codes of practice in regard to customer service
- providing a quality service environment by treating customers in a courteous and professional manner through all stages of the procedure
- using effective questioning/active listening and observation skills to identify customer needs
- communicating effectively with others involved in or affected by the work.

##### Context of and specific resources for assessment

- This unit may be assessed in conjunction with other units that form part of the job role or function.
- Elements of competence contain both knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated work environment.
- Evidence is best gathered using the products, processes and procedures of the individual workplace as the means by which the candidate achieves industry competencies.
- The following should be made available:
  - a workplace or simulated workplace
  - documentation, such as enterprise policy and procedure manuals relating to customer service, enterprise telephone directory, legislation and codes of practice
  - a range of customers with different requirements (real or simulated)
  - a communication system or a range of communication equipment
  - enterprise products/services, features and benefits
  - a qualified workplace assessor.

#### Method of assessment

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances. Evidence of performance may be provided by

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	customers, team leaders/members or other persons, subject to agreed authentication arrangements.
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Business types</b>	Enterprise may vary in size, type and location, and in the range of merchandise and services provided and in delivery policies
<b>Customers</b>	Customers may be regular or new and may have routine or special requests. They may include persons from a range of social, cultural or ethnic backgrounds and have physical and intellectual abilities. Regardless, all customers are made feel welcome, valued and, at the end of the process, satisfied. Customer contact may be face-to-face, by telephone or electronic means or in writing
<b>Customer service</b>	Customer service may include: <ul style="list-style-type: none"> <li>all enterprise activities, internal and external customers and follow-up in event of delays in service provision</li> </ul>
<b>Customer needs</b>	Customer needs may require information regarding: <ul style="list-style-type: none"> <li>products or services available, quality of products or services, complementary products or services, enterprise facilities and services, and the location of specific items</li> </ul>
<b>Staff</b>	Staff may be full-time, part-time or casual and vary in terms of training, product knowledge and in staffing levels. Staff may be operating in routine or busy trading conditions
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>enterprise policies and procedures relating to customer service, equipment and product manufacturer/component supplier specifications, enterprise operating procedures, industry/workplace codes of practice and customer requirements</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Sales and Marketing
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Common
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## AURACA3002 Establish customer requirements of a complex nature

### Modification History

Release	Comment
Release 1	Replaces AURC362721A Establish customer requirements of a complex nature Unit code updated to meet policy requirements. Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit of competency covers the competence to establish customer requirements for sales, parts, administration, finance or services which are more complex.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm customer requirements	<p>1.1. Questioning and active listening techniques are used to clarify customer needs</p> <p>1.2. Customer requirements are elicited professionally, courteously, with tact and without presumptions</p> <p>1.3. Customer requirements are fed back accurately and concisely to the customer for confirmation</p> <p>1.4. Customer requirements are documented accurately in language that can be understood by the customer and by staff</p> <p>1.5. Customer requirements are documented in accordance with industry, legal and/or enterprise standards and procedures</p> <p>1.6. Customer acknowledgement and confirmation of the documented requirements are obtained</p>
2. Advise customer of available options	<p>2.1. Viable options to customer needs are generated by the employee</p> <p>2.2. Viable options that conform to industry, legal and/or enterprise policies and procedures are generated by the employee</p> <p>2.3. Suppliers are contacted to research options</p> <p>2.4. Options are explained and discussed with the customer to facilitate customer understanding</p> <p>2.5. Supporting information is made available to the customer, to facilitate customer understanding</p> <p>2.6. Benefits and approximate costs of each option are explained to the customer to facilitate informed decision making</p>
3. Inform customer of costs	<p>3.1. Customer is provided with estimated costs and timeframes of selected option</p> <p>3.2. Costs and timeframes are communicated verbally or in writing, in accordance with enterprise standards and procedures</p> <p>3.3. Sale or service conditions are explained to customer</p>
4. Agree action plan with customer	<p>4.1. Customer's preferred option, including agreed delivery timeframe, is detailed in action plan</p> <p>4.2. Agreed action plan is documented</p> <p>4.3. Customer commitment to agreed action plan is gained, in accordance with enterprise requirements</p> <p>4.4. Assistance with paperwork requiring completion by customer is provided</p> <p>4.5. Customer feedback is sought on services provided</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to collating and analysing customer requirements and information
- communication skills in relation to dealing with customers, difficult customers and managing conflict and negotiation
- literacy skills in regard to message taking in person or by telephone and completing written or computer documents of customer requirements and action plans
- plan and organise activities to select and follow processes/procedures to ensure desired outcome
- work with others and in a team by requesting and using information/assistance from colleagues
- use mathematical ideas and techniques to include numerical skills in relation to calculating/modelling various financial and/or insurance arrangements
- establish diagnostic processes which include operational skills and techniques in customer service and problem-solving skills
- use workplace technology related to technical skills in operating enterprise telephone systems and other communication equipment

#### Required knowledge

Knowledge of:

- industry/enterprise policies and procedures in regard to:
  - customer service
  - customer requirements/needs documentation
  - allocated duties/responsibilities
- the range of enterprise merchandise and services, location of departments/sections and telephone extensions of departments/sections, suppliers, finance and insurance
- legislation and statutory requirements, including workplace health and safety (WHS), consumer law, trade practices and fair trading legislation
- industry/workplace codes of practice in relation to customer service

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- identifying customer requirements professionally, courteously, with tact and without presumptions
- generating and advising customer of viable options to meet customer needs
- calculating and informing customer of detailed costs and timeframes of agreed option
- proposing and gaining agreement by customer to an action plan to satisfy customer needs.

##### Context of and specific resources for assessment

- This unit may be assessed in conjunction with other units that form part of the job role or function.
- Elements of competence contain both knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated work environment.
- Evidence is best gathered using the products, processes and procedures of the individual workplace as the means by which the candidate achieves industry competencies.
- The following should be made available:
  - a workplace or simulated workplace
  - documentation, such as enterprise policy and procedure manuals relating to customer service, enterprise telephone directory, legislation and codes of practice
  - a range of customers with different complex requirements (real or simulated)
  - a communication system or a range of communication equipment
  - real or simulated customer documents or database
  - a qualified workplace assessor.

#### Method of assessment

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover the varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed

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authentication arrangements.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Unit scope</b>	Enterprises may vary in size, type and location, in the range of merchandise and services provided and in delivery policies
<b>Customers</b>	Customers may: <ul style="list-style-type: none"> <li>• be regular or new</li> <li>• have special or unusual requests</li> <li>• be from a range of social, cultural or ethnic backgrounds and with different physical and mental abilities</li> </ul>
<b>Staff</b>	Staff may be: <ul style="list-style-type: none"> <li>• full-time, part-time or casual and vary in terms of training, product knowledge and staffing levels</li> <li>• operating in routine or busy trading conditions</li> </ul>
<b>Complex customer requirements</b>	Complex customer requirements may include, but are not limited to: <ul style="list-style-type: none"> <li>• unusual or out of the ordinary problems, requirements of special or high importance customers, complex technical problems, matters involving more than one solution or area of service, needs of customers who have not been happy with some aspect of product or service provided or complex financial or insurance arrangements, such as lease, fleet or warranty extension arrangements</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• enterprise policies and procedures relating to customer service, equipment and product manufacturer/component supplier specifications, enterprise operating procedures, legislative and regulatory requirements, industry/workplace codes of practice and customer requirements</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Sales and Marketing
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Common
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## AURACA3003 Build customer relations

### Modification History

Release	Comment
Release 1	Replaces AURC362807A Build customer relations Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit of competency covers the competence to establish customer needs, maintain a customer database and ensure appropriate treatment of customers.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied: <ul style="list-style-type: none"><li>• retail, service and repair.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure maintenance of customer database	<ul style="list-style-type: none"><li>1.1.Evidence of maintenance of customer documents is sought regularly from staff responsible to ensure vital data is kept on existing and potential customers</li><li>1.2.Customer data is maintained to ensure database relevance and currency</li><li>1.3.Information on customers and sales and service history is gathered for analysis</li></ul>
2. Establish needs of customer	<ul style="list-style-type: none"><li>2.1.Customer needs are regularly monitored through formal and informal communication channels</li><li>2.2.Current products and services are assessed against customer needs to determine the ability of the enterprise to meet customer needs</li><li>2.3.Trends in customer service needs are documented and reported to appropriate persons periodically for planning purposes</li></ul>
3. Ensure appropriate treatment of customer	<ul style="list-style-type: none"><li>3.1.Service standards are reviewed regularly against outcomes to ensure required standards are met</li><li>3.2.Staff are trained to provide customer service to an appropriate standard to ensure consistent treatment of customers</li><li>3.3.Work activities of staff are reviewed regularly to ensure customer requirements are met</li><li>3.4.Business operations are reviewed to ensure they meet current and projected customer requirements</li><li>3.5.Staff are actively involved in providing information to improve customer service operations and activities</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to collating and analysing customer information to identify needs
- communicate ideas and information to conduct information sessions for staff
- plan and organise activities concerning information for database entries
- work with others and in a team by involving staff in improvements to customer service
- use mathematical ideas and techniques to plan database cells and size
- establish diagnostic processes which identify and recommend improvements to customer service
- use workplace technology related to use of customer database

#### Required knowledge

Knowledge of:

- enterprise policies and procedures in regard to:
  - customer service
  - maintenance of customer databases
  - dealing with difficult customers
  - allocated duties/responsibilities
- the range of enterprise merchandise and services, location of departments/sections and telephone extensions of departments/sections
- legislation and statutory requirements, including workplace health and safety (WHS), consumer law, trade practices and fair trading legislation
- industry/workplace codes of practice in relation to customer service

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- maintaining relevant and current customer databases in accordance with enterprise policies and procedures
- monitoring, reviewing and assessing customer needs and trends
- ensuring appropriate treatment of customers.

This unit may be assessed in conjunction with other units that form part of the job role or function.

##### Context of and specific resources for assessment

- Elements of competence contain both knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated work environment.
- Evidence is best gathered using the products, processes and procedures of the individual workplace as the means by which the candidate achieves industry competencies.
- The following should be made available:
  - a workplace or simulated workplace
  - documentation, such as enterprise policy and procedure manuals relating to customer service, enterprise telephone directory, legislation and codes of practice
  - computer, database software, customer information and enterprise policies and procedures
  - a range of customers with different requirements (real or simulated)
  - a communication system or a range of communication equipment
  - real or simulated customer database
  - a qualified workplace assessor.

##### Method of assessment

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons, subject to agreed authentication arrangements.



## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Enterprises</b>	Enterprises may vary in size, type and location, range of merchandise and services provided and delivery policies
<b>Customers</b>	<p>Customers may:</p> <ul style="list-style-type: none"> <li>• be regular or new</li> <li>• have routine or special requests</li> <li>• be from a range of social, cultural or ethnic backgrounds and physical and intellectual abilities</li> </ul> <p>Regardless, all customers are made feel welcome, valued and, at the end of the process, satisfied. Customer contact may be:</p> <ul style="list-style-type: none"> <li>• face to face, by telephone, or electronic means or in writing</li> </ul>
<b>Customer service</b>	Customer service may include all enterprise activities, internal and external customers and follow-up in event of delays in service provision
<b>Staff</b>	<p>Staff may be:</p> <ul style="list-style-type: none"> <li>• full-time, part-time or casual and vary in terms of training, product knowledge and staffing levels</li> <li>• operating in routine or busy trading conditions</li> </ul>
<b>Customer needs</b>	<p>Customer needs may include:</p> <ul style="list-style-type: none"> <li>• information regarding available products or services, quality of products or services, complementary products or services, enterprise facilities and services or the location of specific items</li> </ul>
<b>Customer databases</b>	<p>Customer databases may include:</p> <ul style="list-style-type: none"> <li>• information on customer name, contact details, purchase history details of products or services, information requests, special needs and customer 'rating' by enterprise</li> </ul>
<b>Policies and procedures</b>	<p>Policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• enterprise policies and procedures relating to customer service, equipment and product manufacturer/component supplier specifications, enterprise operating procedures, legislative and regulatory requirements, industry/workplace codes of practice</li> </ul>

**RANGE STATEMENT**

	and customer requirements
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**Unit Sector(s)**

<b>Unit sector</b>	Sales and Marketing
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Common
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## AURAEA1001 Identify environmental requirements in an automotive workplace

### Modification History

Release	Comment
Release 1	Replaces AURC172003A Identify environmental regulations and best practice in a workplace or business Performance Criteria updated to reflect sustainability

### Unit Descriptor

Unit Descriptor	<p>This unit describes the performance outcomes required to identify environmental requirements and sustainability practices to be aware of potential environmental hazards in an automotive workplace.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work involves the theory, knowledge and the limited application of skills related to fundamental environmental and sustainability issues in an automotive workplace. Performance of work tasks that maintain sustainability and environmental considerations may be applied in the application of the unit.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability Skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Identify environment regulations and practices	1.1.Reasons for <b><i>ethical environmental practice</i></b> in an automotive workshop are identified 1.2.Environmental responsibilities of staff in an automotive workshop are identified 1.3. <b><i>Documents and procedures</i></b> relevant to environmental safety and <b><i>hazards</i></b> are located and reviewed 1.4.Penalties for individual breaches of legislation are identified and determined 1.5. <b><i>Safety equipment and other material</i></b> necessary to support environmentally sound practices are located and identified
2. Identify hazards to stormwater and wastewater drainage system	2.1.Actions are identified in relation to controlling waste water or <b><i>prescribed wastes</i></b> entering either stormwater or wastewater drainage systems 2.2.Storage methods for parts and components containing environmentally hazardous materials are identified 2.3.Recycling and storage procedures for liquid wastes are identified 2.4.Uses of a spill kit are identified and confirmed 2.5.Procedures are identified to keep workplace
3. Identify hazards to air quality	3.1.Hazards of airborne particles and methods to minimise and contain them are identified 3.2.Hazards of gases and fumes and methods to minimise and contain them are identified
4. Identify noise hazards	4.1.Effects of noise creating activities and methods to minimise these are identified
5. Identify sustainability practices	5.1. <b><i>Sustainability practices</i></b> are identified to minimise waste and sort and store items for recycling or disposal 5.2.Methods to reduce resource consumption (water, electricity, fossil fuels, chemicals) are identified

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - communicate verbal and written ideas and information relating to environmental issues of an automotive workplace
- initiative and enterprise to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - read and interpret workplace environmental procedures
  - read and interpret information in written instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- numeracy skills to measure and calculate length, area and volume
- planning and organising skills to:
  - identify risk factors and actions to minimise risk
  - identify planning, checking and inspection techniques to avoid environmental contamination and wastage

problem-solving skills to:

- recognise a workplace problem or a potential problem
- refer problems outside area of responsibility to appropriate person and suggest possible causes
- identify processes which contribute to improvements for environmental issues
- self-management skills to:
  - identify appropriate safety and environmental response equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - identify and follow workplace documentation, such as environmental codes of practice and operating procedures
- teamwork skills to collaborate and cooperate with other team members
- technical skills to:
  - collect, organise and interpret technical information relating to recognising workplace situations that are potentially harmful to the environment
- technology skills to use workplace environmental safety-related technology to assist with clean and safe work practices

#### Required knowledge

- aspects of environmental legislation and its implications for work being undertaken in an

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
automotive business <ul style="list-style-type: none"><li>• characteristics and potential environmental impact of products used in the automotive industry</li><li>• philosophy of prevention, reuse, reduce, recycle</li><li>• procedures for use of spill kit</li><li>• effects of pollution and mitigation methods</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- demonstrate knowledge of environmental regulations and best practice as they would apply in an automotive workplace or business
- identify materials used in an automotive business and assess their environmental impact
- identify sustainability practices in an automotive workplace.

##### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- access to environmental legislation, regulations and best practice models
- access to an automotive workplace or simulated environment that accurately reflects automotive workshop working conditions
- access to workplace documents and reference images
- access to personal protective and environmental protection equipment of the type intended to be used in response to an

<b>EVIDENCE GUIDE</b>	
	environmental incident or accident.
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Ethical environmental practice</i></b> may include:	<ul style="list-style-type: none"> <li>• conformance to legislative guidelines and obligations</li> <li>• hazardous materials handling best practice applications</li> <li>• organisation insurance requirements</li> <li>• discretion, judgement and problem-solving skills in undertaking environmentally sound work practices.</li> </ul>
<b><i>Documents and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• environmental legislation</li> <li>• material safety data sheets (MSDS)</li> <li>• hazardous substances register</li> <li>• workplace environmental procedures and safety instructions</li> <li>• dangerous goods code safe operating procedures.</li> </ul>
<b><i>Hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• toxic fumes and substances</li> <li>• flammable materials and fire hazards</li> <li>• spillages</li> <li>• waste and debris especially on floors, ladders, trolleys</li> <li>• electricity and water</li> <li>• toxic substances</li> <li>• damaged packing material or containers</li> <li>• broken or damaged equipment</li> <li>• unsafe lifting practices.</li> </ul>
<b><i>Safety equipment and other material</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective equipment (PPE) including: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• hearing protection</li> <li>• gloves</li> <li>• other suitable protective clothing</li> <li>• safety footwear</li> </ul> </li> <li>• spill kit</li> <li>• absorbent materials</li> <li>• drip and catchment trays</li> <li>• waste bags</li> <li>• waste segregation systems.</li> </ul>
<b><i>Prescribed wastes</i></b> may include:	<ul style="list-style-type: none"> <li>• solid or liquid wastes</li> <li>• oil, fuel and grease</li> <li>• hydrocarbon based degreasing agents and solvents</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"> <li>• acids</li> <li>• alkaline wastes</li> <li>• paint, lacquer, varnish</li> <li>• glues and adhesive compounds</li> <li>• household chemicals and pesticides.</li> </ul>
<i>Sustainability practices</i> may include:	<ul style="list-style-type: none"> <li>• recycling waste</li> <li>• energy conservation practices</li> <li>• natural resources (water, etc.) conservation practices</li> <li>• reusing</li> <li>• environmental (green) purchasing practices</li> <li>• noise minimisation.</li> </ul>

## Unit Sector(s)

Field of Competency	Common
Unit Sector	Environment

## Custom Content Section

Not applicable.

## AURAEA2002 Apply environmental and sustainability best practice in an automotive workplace

### Modification History

Release	Comment
Release 1	Replaces AURC272003A Apply environmental regulations and best practice in a workplace or business Performance Criteria updated to reflect sustainability

### Unit Descriptor

Unit Descriptor	<p>This unit describes the performance outcomes required to identify and apply environmental regulations and sustainability best practice to work safely and avoid potential environmental hazards in an automotive workplace.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the Unit	<p>Work involves the theory, knowledge and application of skills related to environmental regulations and sustainability best practice in a general automotive workplace.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in undertaking environmentally sound work practices.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability Skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and apply environment regulations	<p>1.1.Reasons for <i>ethical environmental practice</i> in an automotive workplace are identified</p> <p>1.2.Environmental responsibilities and penalties for individual breaches of legislation and regulations are identified</p> <p>1.3.<i>Documents and procedures</i> relevant to environmental safety and <i>hazards</i> are applied</p> <p>1.4.<i>Safety equipment and other material</i> necessary to support environmentally sound practices are identified and sourced</p>
2. Identify and avoid contamination to water systems and land	<p>2.1.Wastewater and <i>contaminants</i> are identified and prevented from entering water systems or contaminating land</p> <p>2.2.Parts and components containing hazardous materials are drained and stored in a sealed container</p> <p>2.3.Liquid wastes are put into storage or recycling containers and placed in an undercover bunded area</p> <p>2.4.Spill kit is located and used to prevent water or land contamination</p> <p>2.5.Spills are cleaned immediately and workplace is kept clean to prevent unintentional water or land contamination</p>
3. Identify and avoid hazards to air quality	<p>3.1.Hazardous airborne particles are identified, prevented, reduced and contained</p> <p>3.2.Hazardous gases and fumes are identified, prevented, reduced and contained</p>
4. Identify and avoid noise hazards	<p>4.1.Hazardous noise activities are identified, prevented, reduced and contained</p> <p>4.2.Hazardous noise activities are carried out within approved operating hours and regulations</p>
5. Identify and apply sustainability best practice	<p>5.1.<i>Sustainability best practice</i> is identified and applied to minimise waste and potential damage to the environment according to workplace policies and procedures</p> <p>5.2.Methods to reduce resource consumption (water, electricity, fossil fuels, chemicals) are identified and applied</p> <p>5.3.Environmental damage and breaches of environmental regulations are reported</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow oral instructions
  - communicate verbal and written ideas and information as they relate to environmental regulations and sustainability best practice of an automotive workplace
- initiative and enterprise to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand workplace environmental procedures
  - read and apply environmental regulations for an automotive workplace
- numeracy skills to measure and calculate length, area and volume
- planning and organising skills to:
  - identify risk factors and actions to minimise risk
  - identify planning, checking and inspection techniques to avoid environmental contamination and wastage
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - identify processes which contribute to improvements for sustainability best practice
- self-management skills to:
  - identify appropriate safety and environmental response equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to collaborate and cooperate with other team members
- technical skills to:
  - collect, organise and interpret technical information related to recognising workplace situations that are potentially harmful to the environment
  - use spill kits
- technology skills to use workplace environmental safety-related technology to assist with clean and safe work practices

#### Required knowledge

- effects of pollution and methods to minimise it
- environmental regulations and their implications for work being undertaken in an automotive workplace
- characteristics and potential environmental impact of products, equipment and machinery used

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<p>in the automotive workplace</p> <ul style="list-style-type: none"><li>• philosophy of prevention, reuse, reduce, recycle</li><li>• procedures for use of spill kit</li><li>• reporting procedures for environmental damage and breaches of environmental regulations</li></ul>

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• apply environmental regulations and sustainability best practice in an automotive workplace</li> <li>• identify materials used in an automotive workplace and assess their potential environmental impact</li> <li>• use a spill kit</li> <li>• report environmental damage and breaches of environmental regulations.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• access to environmental legislation, regulations and best practice models</li> <li>• access to an automotive workplace or simulated environment that accurately reflects automotive workshop working conditions</li> <li>• access to workplace documents and reference images</li> <li>• access to personal protective equipment of the type intended to</li> </ul>

EVIDENCE GUIDE	
	be used in response to an environmental incident or accident.
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Ethical environmental practice</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• legislative obligations</li> <li>• environmental legislation</li> <li>• health regulations</li> <li>• hazardous materials handling procedures</li> <li>• organisation insurance requirements</li> <li>• discretion, judgement and problem-solving skills in undertaking environmentally sound work practices.</li> </ul>
<p><b><i>Documents and procedures</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• hazardous substances register</li> <li>• workplace environmental procedures and safety instructions</li> <li>• dangerous goods code safe operating procedures.</li> </ul>
<p><b><i>Hazards</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• toxic fumes and substances</li> <li>• flammable materials and fire hazards</li> <li>• spillages</li> <li>• waste and debris especially on floors, ladders, trolleys</li> <li>• electricity and water</li> <li>• toxic substances</li> <li>• damaged packing material or containers</li> <li>• broken or damaged equipment</li> <li>• unsafe lifting practices.</li> </ul>
<p><b><i>Safety equipment and other material</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• personal protective equipment (PPE) including: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• hearing protection</li> <li>• gloves</li> <li>• other suitable protective clothing</li> <li>• safety footwear</li> </ul> </li> <li>• spill kit</li> <li>• absorbent materials</li> <li>• drip and catchment trays</li> <li>• waste bags</li> <li>• waste segregation systems.</li> </ul>

RANGE STATEMENT	
<i>Contaminants</i> may include:	<ul style="list-style-type: none"> <li>• solid or liquid wastes</li> <li>• oil, fuel and grease</li> <li>• hydrocarbon based degreasing agents and solvents</li> <li>• acids</li> <li>• alkaline wastes</li> <li>• paint, lacquer, varnish</li> <li>• glues and adhesive compounds</li> <li>• household chemicals and pesticides.</li> </ul>
<i>Sustainability best practice</i> may include:	<ul style="list-style-type: none"> <li>• recycling waste</li> <li>• energy conservation practices</li> <li>• natural resources (water, etc.) conservation practices</li> <li>• reusing</li> <li>• environmental (green) purchasing practices</li> <li>• noise minimisation.</li> </ul>

## Unit Sector(s)

Field of Competency	Common
Unit Sector	Environment

## Custom Content Section

Not applicable.

## AURAEA3003 Monitor environmental and sustainability best practice in the automotive mechanical industry

### Modification History

Release	Comment
Release 1	Replaces AURT271781A Implement and monitor environmental regulations in the automotive mechanical industry Performance Criteria updated to reflect sustainability

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to apply and monitor environmental regulations and sustainability best practice whilst undertaking mechanical service or repair of light or heavy vehicles, motorcycles, outdoor power equipment or their components in the automotive mechanical industry.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work involves the theory, knowledge and application of skills related to environmental regulations and sustainability best practice in the automotive mechanical industry.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply and monitor environment regulations	<p>1.1.Reasons for ethical environmental practice in an automotive workplace are identified</p> <p>1.2.Environmental responsibilities and penalties for individual breaches of legislation and regulations are identified</p> <p>1.3.Documents and procedures relevant to environmental safety and hazards are applied</p> <p>1.4.Safety equipment and other material necessary to support environmentally sound practices are identified and sourced</p>
2. Monitor and avoid contamination to water systems and land	<p>2.1.Wastewater and contaminants are identified and prevented from entering water systems or contaminating land</p> <p>2.2.Surface cleaning, engine degreasing and preparation is undertaken in an impervious paved area and does not contaminate water systems or land</p> <p>2.3.Parts and components containing hazardous materials are drained and stored in a sealed container</p> <p>2.4.Liquid wastes are put into storage or recycling containers and placed in an undercover bunded area</p> <p>2.5.Parts washing is undertaken in an approved parts washer that does not cause contamination of water systems or land</p> <p>2.6.Spill kit is located and used to prevent water or land contamination</p> <p>2.7.Drip trays are used under vehicles to minimise spills</p> <p>2.8.Spills are cleaned immediately and workplace is kept clean to prevent unintentional water or land contamination</p> <p>2.9.Hands are cleaned over drains connected to an oil/water separator or drums for collection of liquid waste</p>
3. Monitor and avoid hazards to air quality	<p>3.1.Vehicle exhausts and emissions are minimised and prevented from collection in the workplace</p> <p>3.2.Welding is conducted in a well ventilated area</p> <p>3.3.Hazardous airborne particles are monitored, prevented, reduced and contained</p> <p>3.4.Hazardous gases and fumes are monitored, prevented, reduced and contained</p>
4. Monitor and avoid noise hazards	<p>4.1.Hazardous noise activities are monitored, prevented, reduced and contained</p> <p>4.2.Hazardous noise activities are carried out within approved operating hours and regulations</p>
5. Monitor and apply sustainability best	<p>5.1.Sustainability best practice is monitored and applied to minimise waste and potential damage to the environment</p>

practice	<p>according to workplace policies and procedures</p> <p>5.2.Methods to reduce resource consumption (water, electricity, fossil fuels, chemicals) are monitored and applied</p> <p>5.3.Environmental damage and breaches of environmental regulations are monitored and recorded</p>
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow oral instructions
  - communicate ideas and information (verbal and written) as they relate to environmental regulations and sustainability best practice for an automotive mechanical workplace
- initiative and enterprise to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand automotive mechanical workplace environmental procedures
  - read and apply environmental regulations for an automotive workplace
  - record environmental damage and breaches of environmental regulations
- numeracy skills to:
  - interpret instruments, gauges and other recording equipment
  - measure and calculate length, area and volume
- planning and organising skills to:
  - identify risk factors and actions to minimise risk
  - identify planning, checking and inspection techniques to avoid environmental contamination and wastage
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - identify processes which contribute to improvements for sustainability best practice
- self-management skills to:
  - identify appropriate safety and environmental response equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - teamwork skills to work with others and in a team by cooperating with team members
- technical skills to:
  - collect, organise and interpret technical information related to recognising automotive mechanical workplace situations that are potentially harmful to the environment
  - use spill kits
- technology skills to use workplace environmental safety-related technology to assist with clean and safe work practices

#### Required knowledge

## REQUIRED SKILLS AND KNOWLEDGE

- aspects of environmental regulations and its implications for work being undertaken in an automotive workplace
- characteristics and potential environmental impact of products, equipment and machinery used in the automotive workplace
- philosophy of prevention, reuse, reduce, recycle
- procedures for use of spill kit
- effects of pollution and methods to minimise it
- actions to be undertaken in case of significant environmental threat in the automotive mechanical workplace
- monitoring and recording procedures for environmental damage and breaches of environmental regulations

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• monitor and apply environmental regulations and sustainability best practice as they apply in an automotive mechanical workplace</li> <li>• identify materials used in an automotive mechanical workplace and assess their potential environmental impact</li> <li>• monitor and record environmental damage and breaches to environmental regulations.</li> </ul>
<p><b>Context of and specific resources for assessment</b></p>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• access to environmental legislation, regulations and best practice models</li> <li>• access to an automotive workplace or simulated environment that accurately reflects automotive workshop working conditions</li> <li>• access to workplace documents and reference images</li> <li>• access to personal protective equipment of the type intended to</li> </ul>

## EVIDENCE GUIDE

	be used in response to an environmental incident or accident.
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Ethical environmental practice</i></b> may include:	<ul style="list-style-type: none"> <li>• legislative obligations</li> <li>• environmental legislation</li> <li>• health regulations</li> <li>• hazardous materials handling procedures</li> <li>• organisation insurance requirements</li> <li>• discretion, judgement and problem-solving skills in undertaking environmentally sound work practices.</li> </ul>
<b><i>Documents and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• hazardous substances register</li> <li>• workplace environmental procedures and safety instructions</li> <li>• dangerous goods code safe operating procedures.</li> </ul>
<b><i>Hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• toxic fumes and substances</li> <li>• flammable materials and fire hazards</li> <li>• spillages</li> <li>• waste and debris especially on floors, ladders, trolleys</li> <li>• electricity and water</li> <li>• toxic substances</li> <li>• damaged packing material or containers</li> <li>• broken or damaged equipment</li> <li>• unsafe lifting practices.</li> </ul>
<b><i>Safety equipment and other material</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective equipment (PPE) including: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• hearing protection</li> <li>• gloves</li> <li>• other suitable protective clothing</li> <li>• safety footwear</li> </ul> </li> <li>• spill kit</li> <li>• absorbent materials</li> <li>• drip and catchment trays</li> <li>• waste bags</li> <li>• waste segregation systems</li> </ul>
<b><i>Contaminants</i></b> may include:	<ul style="list-style-type: none"> <li>• solid or liquid wastes</li> <li>• oil, fuel and grease</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"> <li>• hydrocarbon based degreasing agents and solvents</li> <li>• acids</li> <li>• alkaline wastes</li> <li>• paint, lacquer, varnish</li> <li>• glues and adhesive compounds</li> <li>• household chemicals and pesticides.</li> </ul>
<i>Sustainability best practice</i> may include:	<ul style="list-style-type: none"> <li>• recycling waste</li> <li>• energy conservation practices</li> <li>• natural resources (water, etc.) conservation practices</li> <li>• reusing</li> <li>• environmental (green) purchasing practices</li> <li>• noise minimisation.</li> </ul>

## Unit Sector(s)

Field of Competency	Common
Unit Sector	Environment

## Custom Content Section

Not applicable.

## AURAEA4004 Manage environmental compliance in an automotive workplace

### Modification History

Release	Comment
Release 1	<p>Replaces AURC472082A Plan and manage compliance with environmental regulations in a workplace or business</p> <p>Unit code updated to meet policy requirements.</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to plan and implement management system that ensures the protection of the environment in a workplace or business.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involves the activities of an automotive business, including the planning and management of the occupations of glazing, accessory fitting, window tinting, trimming, and bicycles.</p> <p>This unit is applicable to qualifications at both the Certificate IV and V level. In recreational boating, vehicle body and some technical areas involving the removal of components containing oils or other fluids, specific environmental units of competency should be used.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills to improve environmental performance by reducing environmental risk and waste.</p> <p>Competence may be demonstrated in any automotive business excluding, body repair, marine and mechanical involving the removal of components containing oils or other fluids.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and manage compliance with environmental regulations	1.1.Reasons for ethical environmental practice in a workplace or business are identified 1.2.Environmental responsibilities of employers and employees in an automotive workplace or business are identified 1.3.Penalties for enterprise and individual breaches of the legislation are identified 1.4.Waste products are minimised and facilities provided for waste materials to be stored in bins for recycling or disposal 1.5.Collection and recycling arrangements are implemented for liquids, sludge, solids and other waste 1.6.Suppliers with minimal excess packaging on goods received are sourced and packaging on goods received is sorted and disposed of appropriately 1.7.Waste and energy conservation strategies are identified and implemented
2. Manage potential hazards to stormwater system to avoid contamination	2.1.Systems are in place to ensure wastewater does not enter the stormwater system 2.2.All drains and flows are identified on a worksite map directly indicating where they flow 2.3.Trade waste permits are in place 2.4.Undercover and bunded or drained areas are provided and used for the storage of all materials containing environmentally hazardous substances 2.5.Spill kit is provided and used to prevent stormwater contamination 2.6.Workplace is kept clean to prevent unintentional stormwater pollution
3. Manage potential hazards to air quality to avoid contamination	3.1.Hazards of airborne particles are identified, minimised and contained 3.2.Hazards of gases and fumes are identified, minimised and contained 3.3.A well-ventilated area is provided for any welding activities
4. Minimisation of noise hazards is planned and managed	4.1.Noise creating activities are minimised and carried out within approved operating hours 4.2.Fixed machinery is fitted with silencers or surrounded by noise containment material
5. Management systems	5.1.An environmental policy and contingency plan suitable to the needs of the business is developed and implemented 5.2.Waste to landfill is calculated and possible savings through

ELEMENT	PERFORMANCE CRITERIA
	<p>reuse and recycling are calculated</p> <p>5.3. Payback period on environmental equipment is calculated</p> <p>5.4. Manage staff adherence to environmental responsibilities</p> <p>5.5. Environmental documents are maintained and stored securely in a form accessible for reporting procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to environmental procedures from legislation, regulations, policies, guidelines, standards and workplace best practices in an automotive business
- communicate ideas and information to ensure all work undertaken is in accordance with environmental best practice, support from stakeholders is actively sought for implementing suitable innovation and continuous improvement
- plan and organise activities including the preparation of equipment and materials recycling and waste management systems and the selection of worksite to avoid environmental contamination, back tracking, workflow interruptions or wastage
- promote work with others and in a team by recognising dependencies and using cooperative approaches to minimise wastage, optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work and calculate wastage rates of various methods
- use planning, checking and inspection techniques to avoid environmental contamination and wastage
- use the workplace technology related to environmental protection and recycling equipment

#### Required knowledge

Knowledge of:

- aspects of environmental legislation and its relationship with workplace health and safety (WHS), finance and risk management
- requirements for trade waste permits
- spill clean-up procedures
- characteristics and potential environmental impact of products used in the business
- philosophy of sustainability through prevention, reuse, reduce and recycle
- procedures for rectifying machinery faults and material defects
- actions to be taken in case of environmental threat in the workplace
- reporting procedures for environmental damage occurring in the workplace
- cleaner production and eco-efficient strategies to avoid the production of waste

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Plan and manage safe handling requirements for equipment, products and materials, including use of personal protective equipment
- Plan and manage environmental protection procedures
- Identify materials used in the business and assess and manage their environmental impact
- Plan and manage work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - maintain a clean workplace
  - prevent damage and wastage of goods, equipment and products
  - dispose of waste in accordance with legislative requirements and best practice
  - maintain production output, and product and service quality
- Report environmental damage or spills
- Plan and manage operator maintenance on equipment to ensure environmental efficiency
- Manage effective planning and teamwork related to environmental best practice
- Develop/implement or audit an existing business environmental policy which covers at a minimum: waste, recycling, hazards to stormwater, air quality, noise, energy minimisation and costs
- Modify activities to cater for variations in workplace context and environment.

##### Context of and specific resources for assessment

- Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines
- The following should be made available:
  - access to an automotive business which includes waste materials of various types, recycling bins, liquid, sludge and solid wastes
  - resources may include pressure washing and facilities for the use of recycled water.

**EVIDENCE GUIDE****Method of assessment**

- Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts.
- Assessment should be by direct observation of tasks and questioning on underpinning knowledge.
- Assessment should be conducted over time and should be in conjunction with assessment of other units of competence.
- Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a component authority.
- Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Automotive business</b>	Any automotive business excluding body repair, marine and mechanical involving the removal of components containing oils or other fluids
<b>Work procedures</b>	<p>Work is carried out in accordance with:</p> <ul style="list-style-type: none"> <li>• WHS legislation, material safety data sheets (MSDS), hazardous substances and dangerous goods code and local safe operating procedures</li> <li>• legislative obligations, environmental legislation, health regulations, and manual handling procedures and organisation insurance requirements</li> </ul>
<b>Tools and equipment</b>	<p>Tools and equipment are to include:</p> <ul style="list-style-type: none"> <li>• spill kits, recycling bins and drums</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• environmental legislation, regulations and advice</li> <li>• workplace procedures relating to the use of tools and equipment</li> <li>• work instructions and procedures</li> <li>• worksite environmental policy</li> <li>• workplace procedures relating to reporting and communication</li> <li>• manufacturer/component supplier specifications and operational procedures</li> <li>• local council and waterways regulations</li> <li>• MSDS, environmental documents, manufacturer/component supplier specifications, costing of equipment and waste removal</li> <li>• staff environmental induction material</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Environment
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## AURFA2001 Use numbers in an automotive workplace

### Modification History

Release	Comment
Release 1	Replaces AURC251677A Use numbers in the workplace Performance Criteria updated to reflect the automotive workplace

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to make simple calculations and numerical estimations relating to vehicle repairs, parts and labour quotations and preparatory calculations for workplace documentation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work requires individuals to demonstrate entry level proficiency with numerically orientated problem-solving skills as they relate to vehicle repairs or workplace administrative documentation in an automotive workplace or setting.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collect and organise numerical information	1.1.Relevant <i>examples of numerical information</i> are sourced 1.2.Numerical information is extracted from automotive workplace documents and compared to job requirements 1.3.Automotive mechanical text and related numerical information collected from other sources is checked and identified as relevant to task
2. Interpret and present automotive numerical information	2.1.Procedures are established for the interpretation of numerical information 2.2.Numerical information is identified and interpreted 2.3. <i>Calculations</i> are carried out to establish comparable numerical information 2.4.Calculations are checked for accuracy against numerical information 2.5.Numerical and related information is applied to inspection or repair activity 2.6.Evidence for interpretation of results is presented
3. Prepare and present other workplace numerical and related information	3.1. <i>Information and workplace documents</i> that support automotive workplace administrative functions are sourced 3.2.Quantities/resources required in the workplace are estimated 3.3.The time required to complete the task is estimated 3.4.Settings for equipment and machinery are estimated and adjusted 3.5.Estimates or calculations are documented according to workplace documentation procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information using calculations in reports and repair quotations
- initiative and enterprise to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand written numerical workplace procedures and documents
  - read and follow numerical information on written instructions, specifications, standard operating procedures, manuals, lists, mechanical drawings and other applicable reference documents
- numeracy skills to:
  - use mathematical ideas and techniques to count and measure
  - select and apply mathematical processes, including at a minimum; addition, subtraction, multiplication and division
- planning and organising skills to:
  - plan and organise activities using numbers/calculations in plans and work requirements
  - plan and organise activities relating to the reading of automotive specific text
- problem-solving skills to:
  - identifying suitable mathematical principles to solve numerical problems
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
- self-management skills to:
  - select and use appropriate written materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to work with others and in a team by seeing and conveying information relating to the calculating, planning, sequencing and completion of the task
- technical skills to collect, organise and understand information relating to collating figures, calculation and analysis
- technology skills to:
  - use available workplace technology relating to using numbers in an automotive workplace
  - use workplace technology to assist with information transfer

#### Required knowledge

- knowledge of workplace policies and procedures relating to the collection, storage and application of numerical information
- basic mathematical concepts

**REQUIRED SKILLS AND KNOWLEDGE**

- metric and non-metric systems of measurement as they relate to numerical calculations for vehicle repairs
- calculations including addition, multiplication, subtraction, division and percentages
- calculations involving whole numbers and fractions

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- identify and source relevant technical information
- gather and evaluate mathematical information relating to the problem or job requirement
- devise and implement mathematical and numerical solutions for a minimum of three key vehicle or workplace functions
- demonstrate mathematical and numerical solutions in workplace documentation.

##### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice

The following resources should be made available:

- a workplace or simulated workplace
- documentation, such as workshop manuals, vehicle repair information, enterprise or sample documents, invoices, statements, stock records, job cards, repair quotations, personnel records, time sheets and supply quotations
- equipment for calculations, such as calculators or computers.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Examples of numerical information*** may include:

- manufacturer/component supplier specifications
- vehicle workshop / repair manuals
- equipment / component specifications
- automotive texts
- information sourced from enterprise-specific documents
- equipment or material supply quotations.

***Calculations*** may include:

- using simple mathematical equations with or without assistance of a calculator, relating to automotive oriented data and equipment, involving the use of:
  - counting
  - measurement
  - addition
  - subtraction
  - multiplication
  - division
  - whole numbers
  - fractions
- using metric and non-metric measurement systems
- using measuring devices.

***Information and workplace documents*** may include:

- repair quotations
- numerical invoices
- statements
- stock records
- job cards
- personal records
- time sheets
- computer records,
- supplier invoices or statements.

**Unit Sector(s)**

<b>Field of Competency</b>	Common
<b>Unit Sector</b>	Foundation Skills

**Custom Content Section**

Not applicable.

## AURFA2002 Read in an automotive workplace

### Modification History

Release	Comment
Release 1	Replaces AURC251356A Read in the workplace Performance Criteria updated to reflect the automotive workplace

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to read automotive workplace documents, such as safety procedures and workshop manuals, in order to perform routine tasks in an automotive or workshop setting.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work requires individuals to demonstrate entry-level proficiency to read automotive-specific texts and manuals so that decisions can be made regarding mechanical service and repair requirements.</p> <p>Work applies to the application of technical information gained from reading automotive text and should be contextualised to the service and repair of vehicles in an automotive workplace.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Read text that contains specialist information in a variety of formats	1.1. <b><i>Specialist text</i></b> is understood and correctly applied 1.2. Main points identified while <b><i>reading</i></b> are presented and applied as solutions or ideas 1.3. Meaning of new technical words is determined 1.4. Meaning of key words and phrases is determined 1.5. Text information of relevance to own role and responsibilities is identified and communicated to others as required

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to others relating to automotive-specific text in the workplace
- initiative and enterprise skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand written workplace specialist text relating to automotive service and repair tasks
  - read and follow information in specialist text, including specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- numeracy skills to understand numbers and mathematical units
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
- self-management skills to:
  - select and use appropriate written materials, processes and procedures
  - recognise limitations and seek timely advice
- technology skills to use workplace technology to:
  - read in an automotive workplace
  - assist with accessing and transferring information

#### Required knowledge

- techniques for understanding key ideas in specialist workplace text and documents
- common automotive workplace terminology
- procedures for accessing and reviewing workplace texts and documents

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- read automotive-related or business text and take appropriate action
- read equipment manuals to assist in operation and maintenance schedules
- apply information from written specialist texts
- extract key information and communicate it to others as required.

##### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available:

- written automotive text and repair information
- equipment and materials relevant to task
- workplace-specific documents, such as stock records, job cards, repair quotations, personnel records, time sheets and meeting notes
- operational forms, memos, messages and faxes
- equipment manuals

	<ul style="list-style-type: none"><li>• service bulletins</li><li>• dictionaries and other language aids.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Specialist text*** may include:

- workplace standard operating procedures
- product manufacturer and component supplier specifications
- instructions in vehicle workshop manuals
- service and repair bulletins
- industry codes of practice
- automotive text.

***Reading*** includes:

- reading and understanding text
- reading and interpreting specific business details and documents (e.g. service manuals and work or job orders) for own use and passing on to others
- reading and interpreting internal and external correspondence and taking action
- reading and interpreting manufacturers' installation and fitting instructions for ancillary equipment
- interpreting written text to enable action to be taken.

## Unit Sector(s)

<b>Competency field</b>	Common
<b>Unit sector</b>	Foundation Skills

## Custom Content Section

Not applicable.

## AURAF2003 Communicate effectively in an automotive workplace

### Modification History

Release	Comment
Release 1	Replaces AURC270789A Communicate effectively in the workplace Performance Criteria updated to reflect the automotive workplace

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes to communicate in an automotive workplace by oral and written means, including the use of automotive technical terminology and vehicle and component descriptions as they pertain to modern motor vehicles.</p> <p>Work requires individuals to communicate effectively with other persons in an automotive workshop or setting and includes communicating specific technical information.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to day-to-day workplace communications and workplace correspondence relating to vehicle servicing and repair, technical workplace information, as well as general workplace communication procedures and instructions.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for communication activities	<p>1.1. <b>Documents, forms or other relevant sources of technical information</b> are sourced</p> <p>1.2. Items of stationery, documents or instructions appropriate to the method of communication are sourced</p> <p>1.3. Communication procedures are determined to minimise task time</p>
2. Read routine documents	<p>2.1. Purpose of the text is understood and described</p> <p>2.2. Main points or ideas identified by reading are presented and described</p> <p>2.3. Meaning of new technical words are comprehended and applied</p> <p>2.4. Meaning of key words and phrases is identified</p>
3. Write routine texts	<p>3.1. Routine texts of one or more sentences are composed according to workplace requirements</p> <p>3.2. Routine forms are completed according to workplace requirements</p> <p>3.3. Spelling, punctuation and grammar rules are followed</p> <p>3.4. Texts are self-checked for accuracy and presented for progress checks by relevant persons</p>
4. Contribute to workplace communications	<p>4.1. Information is conveyed by appropriate means to ensure <b>effective communication</b> when sending or receiving information</p> <p>4.2. Assistance is provided to colleagues in the workplace to foster common understanding</p> <p>4.3. Requests for information from colleagues are determined and responded to</p>
5. Operate workplace communication systems	<p>5.1. <b>Communication system functions</b> are used according to communication requirements and workplace policy</p> <p>5.2. Communication by telephone is carried out using customer relation practices according to workplace policy and procedures</p> <p>5.3. Communication by computer is carried out according to workplace policy and procedures</p> <p>5.4. Messages are responded to promptly and returned if required</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - communicate ideas and information utilising plain English literacy and communication skills in relation to writing, reading and understanding workplace documents
  - oral communication skills in relation to conveying and receiving workplace information
- initiative and enterprise to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand written workplace procedures
  - read, interpret and follow information on written instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- numeracy skills to understand numbers and mathematical units
- planning and organising skills to:
  - plan and organise activities which communicate standard procedures
  - plan and organise activities to take or leave a telephone message
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
- self-management skills to:
  - select and use appropriate written materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to work with others and in a team by distributing information to team members
- technical skills to collect, organise and understand information relating to technical automotive workplace information
- technology skills to use relevant workplace technology related to communicating effectively in an automotive workplace by written or oral means

#### Required knowledge

- workplace forms, documents and stationery
- common automotive terminology
- manufacturers repair manuals
- enterprise policies and procedures including:
  - workplace document style, format and layout

**REQUIRED SKILLS AND KNOWLEDGE**

- workplace communication procedures
- workplace documents
- telephone protocols and operating procedures
- worksite reporting procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- write short routine texts using correct spelling, punctuation and grammar
- read, interpret and apply routine texts in the workplace
- interpret and convey workplace information
- apply and demonstrate workplace procedures for incoming and outgoing telephone calls
- maintain workplace communications, including documents.

##### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice

The following resources should be made available:

- a workplace or simulated workplace
- documentation, such as enterprise sample policies and procedures manuals relating to workplace communication procedures
- workplace documents, telephone protocols and operating procedures
- enterprise or sample stationery, documents and forms

EVIDENCE GUIDE	
	<ul style="list-style-type: none"><li>• access to workplace or similar communication systems.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Documents, forms or other relevant sources of technical information</i></b> may include:	<ul style="list-style-type: none"> <li>• manufacturers repair manuals</li> <li>• enterprise policies and procedures</li> <li>• job cards</li> <li>• work instructions</li> <li>• workplace forms, documents or stationery</li> <li>• telephone operating procedure.</li> </ul>
<b><i>Effective communication</i></b> may include:	<ul style="list-style-type: none"> <li>• communicating by most appropriate means including face to face, telephone, written or electronic means</li> <li>• speaking clearly</li> <li>• writing legibly</li> <li>• using eye contact</li> <li>• using appropriate body language.</li> </ul>
<b><i>Communication system functions</i></b> may include:	<ul style="list-style-type: none"> <li>• telephone use and system operating procedures such as:               <ul style="list-style-type: none"> <li>• transferring calls</li> <li>• calls on hold</li> <li>• messaging</li> </ul> </li> <li>• computer               <ul style="list-style-type: none"> <li>• emails</li> <li>• file transfers</li> <li>• document distribution.</li> </ul> </li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Common
<b>Unit sector</b>	Foundation Skills

## Custom Content Section

Not applicable.

## AURFA2004 Solve routine problems in an automotive workplace

### Modification History

Release	Comment
Release 1	Replaces AURC252327A Identify, clarify and resolve problems Performance Criteria updated to reflect the automotive workplace

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to identify and clarify the nature of routine problems commonly encountered in an automotive workplace as they relate to automotive vehicle repair. It involves deciding on the best solution, implementing and evaluating solutions and assisting others to identify and resolve problems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to the process implemented when addressing a problem in relation to vehicle or equipment repair. This unit has application throughout all sectors of the automotive industry and can be applied to resource, equipment, job function, workplace environment or process related problems.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and clarify nature of the problem	1.1.Signs of <b>problems</b> are identified or anticipated 1.2. <b>Information and evidence</b> is gathered from a variety of sources 1.3.Detailed analysis of the information is prepared, listing all options 1.4.Relevant and irrelevant components of the problem are distinguished within the available timeframe
2. Determine criteria for optimal solution and implement solution	2.1.Range of possible <b>solution methods</b> are defined 2.2.Options and strategies are identified or devised 2.3.Strengths and weaknesses of each option and strategy are considered against determined criteria 2.4.The optimal solution is determined 2.5.An implementation strategy is prepared and presented to designated persons for approval 2.6.The chosen solution is implemented within available timeframe
3. Evaluate and report on effectiveness of solutions and outcomes	3.1.Criteria are established to determine if chosen solutions resolve the problem 3.2.The chosen solution is evaluated against the determined criteria 3.3.Follow-up procedures are implemented by investigating things that have gone wrong and developing <b>contingency arrangements</b> 3.4.The effectiveness of the solution is reported to the workgroup or designated persons
4. Assist others to identify, clarify and resolve problems in the workplace	4.1.Others are assisted to anticipate or identify the indicators of a problem 4.2.Others are assisted to investigate the problem 4.3.Others are assisted to devise and evaluate alternative options and strategies 4.4.Others are assisted to implement the chosen solution

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information relating to reading and understanding workplace documents
- initiative and enterprise to identify sources of information, assistance and expert knowledge to assist with problem solving
- literacy skills to:
  - understand written workplace procedures and documents
  - read and follow information in written instructions, specifications, standard operating procedures, charts and other applicable reference documents
- numeracy skills to use mathematical ideas and techniques where required for solution options
- planning and organising skills to plan and organise activities for a plan of action developed to solve problems
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - adopt strategic approaches to routine problem solving
  - establish diagnostic processes that use basic analytical and problem-solving skills relating to identifying, evaluating and resolving work-related problems
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
- self-management skills to:
  - select and use appropriate written materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to work with others and in a team by using basic communication and teamwork skills to assist others to solve problems
- technical skills to collect, organise and understand information relating to collating information to define problems
- technology skills to use workplace technology for research and to report on effectiveness

#### Required knowledge

- workplace policies and work procedures in relation to problem identification and problem solving
- problem identification, evaluation and reporting procedures
- problem identification, evaluation and reporting practices and strategies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- communicate effectively with others involved in or affected by the work
- identify indicators of problems or potential problems
- gather and evaluate information relating to the problem
- devise solutions
- implement solutions as they relate to mechanical or electrical faults or problems in an automotive workplace.

#### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- documentation, such as workplace or sample policies and procedures, vehicle workshop or repair manuals related to work procedures and problem solving
- vehicles with mechanical or electrical faults or problems requiring resolution.

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Problems</i></b> may include:	<ul style="list-style-type: none"> <li>• problems relating to normal work activities within the responsibility of the individual or workgroup</li> <li>• problems that arise relating to additional or non-standard work activities</li> <li>• problems caused by internal or external changes in work conditions or the environment.</li> </ul>
<b><i>Information and evidence</i></b> may include:	<ul style="list-style-type: none"> <li>• equipment or product manufacturer and component supplier specifications</li> <li>• workplace policies and procedures</li> <li>• customer requirements</li> <li>• repair quotations</li> <li>• legislation and regulations</li> <li>• industry and workplace codes of practice.</li> </ul>
<b><i>Solution methods</i></b> may include:	<ul style="list-style-type: none"> <li>• personal problem solving</li> <li>• mathematical problem solving</li> <li>• root cause analysis</li> <li>• brainstorming</li> <li>• lateral thinking</li> <li>• trial and error</li> <li>• substitution.</li> </ul>
<b><i>Contingency arrangements</i></b> may include:	<ul style="list-style-type: none"> <li>• technical evaluation</li> <li>• physical evaluation</li> <li>• formulating or revising plans</li> <li>• strategy development</li> <li>• evaluating procedures</li> <li>• time management</li> <li>• communication strategies.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Common
<b>Unit sector</b>	Foundation Skills

**Custom Content Section**

Not applicable.

## AURFA2005 Write routine texts in an automotive workplace

### Modification History

Release	Comment
Release 1	<p>Replaces AURC251179A Write routine texts in the workplace and complete automotive documentation</p> <p>Unit code updated to meet policy requirements.</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to write routine texts, ensuring correct grammar and punctuation are used, and to complete standard automotive forms.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied.</p> <ul style="list-style-type: none"><li>• retail, service and repair administration/sales.</li></ul> <p>Methods include:</p> <ul style="list-style-type: none"><li>• documenting details of a telephone message</li><li>• completing and lodging various forms.</li></ul> <p>Specific requirements include:</p> <ul style="list-style-type: none"><li>• information on routine operational matters</li><li>• writing to persons who are familiar with subject matter</li><li>• using correct grammar/punctuation.</li></ul>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Write routine texts	<ul style="list-style-type: none"><li>1.1.A text of one or two sentences is documented</li><li>1.2.A factual statement of one or two sentences is composed</li><li>1.3.Spelling, punctuation and grammar are accurate</li><li>1.4.Information is self-checked and presented for frequent progress checks by designated officer</li></ul>
2. Complete industry form	<ul style="list-style-type: none"><li>2.1.Identify correct form for purpose</li><li>2.2.Collect information for completion of form</li><li>2.3.Complete relevant sections of form</li><li>2.4.Organise for other sections of form to be completed by relevant persons</li><li>2.5.Gather supporting documentation or information</li><li>2.6.Determine signatory requirements and complete</li></ul>
3. Lodge form	<ul style="list-style-type: none"><li>3.1.Determine body for lodging form, due date and method of lodgement</li><li>3.2.Copy form and store in accordance with enterprise procedure</li><li>3.3.Lodge form with body with necessary supporting documents or payments</li></ul>
4. Follow up	<ul style="list-style-type: none"><li>4.1.Follow-up dates for action are noted in accordance with company procedure</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to writing routine texts and completing automotive forms in the workplace
- communicate ideas and information related to writing routine texts and completing automotive forms in the workplace
- plan and organise activities related to writing routine texts and completing automotive forms in the workplace
- work with others and in a team by seeking and conveying information related to the planning, sequencing and completion of the task
- use mathematical ideas and techniques to count and measure
- utilise processes that identify methods to gather information and resolve questions related to writing routine texts and completing automotive forms in the workplace
- use workplace technology related to writing routine texts, completing automotive forms, sourcing information and lodgement of forms in the workplace
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#### Required knowledge

- written communication techniques
- routine enterprise texts/stationery
- enterprise policies and procedures for preparing written texts
- sources of information required on standard forms
- purpose of forms

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- writing short routine texts using correct grammar and punctuation
- use of correct form for the requirement
- correct completion of all aspects of the form
- correct lodgement procedure.

##### Context of and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job.
- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- Prescribed outcome must be able to be achieved without direct supervision.
- The following should be made available:
  - forms from government departments or agencies
  - car hire agreements
  - writing equipment and materials
  - enterprise-specific documents (e.g. time cards, leave application forms and requisitions)
  - telephones, faxes, email and internet
  - dictionaries and other written language aids.

#### Method of assessment

Practical assessments:

- complete routine business texts
- use correct grammar and punctuation
- identification and completion of form.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Forms</b>	Forms may include: <ul style="list-style-type: none"> <li>vehicle registration, change of ownership, insurance policies or car hire agreements</li> </ul>
<b>Lodgement</b>	Lodgement may be by: <ul style="list-style-type: none"> <li>post, hand, electronically or facsimile</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>information related to forms and requirements from government departments or agencies</li> <li>information related to completion and supporting documentation from government department or agencies</li> <li>information related to: <ul style="list-style-type: none"> <li>car hire agreements</li> <li>manufacturer/component supplier specifications</li> <li>enterprise operating procedures</li> <li>product manufacturer/component supplier specifications</li> <li>customer requirements</li> <li>industry/workplace codes of practice</li> </ul> </li> </ul>
<b>Workplace health and safety (WHS)</b>	WHS requirements may include: <ul style="list-style-type: none"> <li>state/territory WHS legislation</li> <li>award provisions</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Common
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Foundation Skills
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## AURAF3008 Read and apply automotive repair instructions

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to source, read and apply workplace instructions in an automotive repair environment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the automotive repair industry and relates to all sectors in that environment. It involves the application of skills and knowledge to follow worksheets and work orders at a technician level.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and obtain repair instructions	1.1.Repair instructions are sourced and read 1.2. <b><i>Recommended repair procedures</i></b> are identified and relevant <b><i>information</i></b> is located and applied
2. Initiate work order for repairs	2.1.Repair instructions are followed 2.2.Equipment and material requirements are identified and checked for correct operation 2.3.Repair procedures are initiated where required according to original equipment manufacturer (OEM) recommended repair procedure and <b><i>workplace requirements</i></b>
3. Conduct work	3.1.Repairs are carried out in line with <b><i>instructions</i></b> and without causing damage to workplace property, vehicles, systems or components 3.2.Completed work is checked for compliance with worksheets, work orders and OEM specifications; and finalised to workplace quality standard

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow recommended repair procedure
  - follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, worksheets, work orders and OEM repair procedures
  - read and follow industry and workplace quality standards and procedures
  - document required repair procedures and parts
- numeracy skills to interpret and calculate OEM repair measurements
- planning and organising skills to:
  - plan repair requirements and follow job repair specification
  - identify risk factors and take action to minimise them
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate repair equipment, materials, processes and procedures
  - follow workplace policies and documentation, including industry codes of practice and procedures
  - respond positively to changing work requirements
- technical skills to use workplace tools relating to repair procedures, including:
  - specialist tools and equipment
  - measuring equipment
- technology skills to:
  - operate body repair and repair equipment
  - use technology to collect and provide information on repair processes

#### Required knowledge

- techniques for reading and interpreting regulations and technical documentation, such as worksheets and work orders, component specification sheets, workplace policies and procedures, and environmental regulations
- workplace health and safety (WHS) regulations and requirements relating to automotive repairs

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes for work required
- OEM-recommended repair procedures and quality processes
- workplace quality processes relating to automotive repairs

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- read and correctly interpret work sheets and work orders
- maintain working knowledge of repair systems and practices
- work and communicate effectively and positively with others
- apply, within scope of own role, the requirements of the job or work role to:
  - achieve work quality goals
  - effectively apply problem-solving techniques
- read worksheets and work orders
- establish correct work processes and material requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- worksheets
- work orders
- vehicle specification sheets
- vehicle repair requirements

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• vehicle job cards</li><li>• OEM-recommended repair procedures.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Recommended repair procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• OEM specifications</li> <li>• repair sequence</li> <li>• specialist equipment.</li> </ul>
<b><i>Information</i></b> may include:	<ul style="list-style-type: none"> <li>• award provisions</li> <li>• customer requirements</li> <li>• industry codes of practice</li> <li>• OEM repair procedures</li> <li>• symbols, codes, legends and diagrammatic representations</li> <li>• workplace manuals</li> <li>• workplace operating procedures</li> <li>• worksheets and work orders.</li> </ul>
<b><i>Workplace requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• access and equity principles and practices</li> <li>• environmental management: waste disposal, recycling and re-use guidelines</li> <li>• emergency and evacuation procedures</li> <li>• equipment use procedures</li> <li>• legal obligations</li> <li>• maintenance and storage procedures</li> <li>• WHS requirements</li> <li>• workplace and site guidelines</li> <li>• policies and procedures relating to own role and responsibility</li> <li>• quality guidelines</li> <li>• quality and continuous improvement processes</li> <li>• recording and reporting guidelines.</li> </ul>
<b><i>Instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• worksheets</li> <li>• work orders</li> <li>• OEM-recommended repair procedures</li> <li>• industry and workplace quality standards.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Common
<b>Unit sector</b>	Foundation Skills

**Custom Content Section**

Not applicable.

## AURAF A5006 Prepare technical reports

### Modification History

Release	Comment
Release 1	Replaces AURT577520A Prepare technical reports Unit code updated to meet policy requirements. Licensing statement added to unit descriptor Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to identify and analyse requirements, to plan and conduct research, to evaluate information and findings, and to develop, document and present technical reports.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	A technical report is one that researches, analyses and reports on the specifications and/or effectiveness of existing or proposed technical systems, componentry, materials and/or processes.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for the reporting requirement	<p>1.1.Purpose or objective of the report is identified, clearly defined and confirmed with the customer or sponsor.</p> <p>1.2.Project timeframe and outline plan of the main activities are prepared and confirmed with key parties.</p> <p>1.3.Requirements for information entry, storage, output and quality of document production are identified in accordance with enterprise procedures.</p>
2. Plan the research effort	<p>2.1.Scope and nature of the information requirements are identified.</p> <p>2.2.All possible sources of the required information are researched and identified.</p> <p>2.3.A systematic research or information collection plan is designed to optimise the process.</p> <p>2.4.Resources are obtained and scheduled to service the research requirements.</p>
3. Conduct research	<p>3.1.Research is undertaken effectively in accordance with the plan.</p> <p>3.2.Experiments and tests to support the research effort are conducted in a manner which ensures the demonstrable integrity of the outcomes or findings.</p> <p>3.3.Research findings are logged, documented and stored to maintain traceability.</p> <p>3.4.Preliminary analysis is conducted to identify requirements for variations or additions to the research plan.</p>
4. Analyse the information	<p>4.1.Information is sorted, documented and prepared for the analytical process.</p> <p>4.2.Information and data is manipulated to enable reasonable comparisons and judgements.</p> <p>4.3.Clarification by way of expert advice and opinion is sought.</p> <p>4.4.Conclusions and findings reached are logical and based on objective analysis of the available data.</p>
5. Prepare and present the report	<p>5.1.Report clearly defines the objectives, process, findings and further actions.</p> <p>5.2.Report addresses and satisfies the stated objective and timeframe.</p> <p>5.3.Report and associated presentation materials are of a standard and quality for the intended audience.</p> <p>5.4.Reader comprehension of the report is aided by use of executive summaries and attachments.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>5.5. Protocols, conventions and legal requirements related to acknowledgements and intellectual property are applied.</p> <p>5.6. Information management requirements, including documenting and repository actions are satisfied in accordance with enterprise procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, collect, organise and understand technical information related to the subject area, developmental activities, testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to ensure the completeness, clarity and comprehension of the technical report by the target audience.
- plan and organise the research and writing effort to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise research and writing.
- use mathematical ideas and techniques to incorporate calculation, measurements, calibration and test requirements into research and validation activities.
- establish processes which anticipate and allow for risks, cater for both direct and indirect causes, avoid or minimise reworking and avoid wastage in the research and report preparation activities.
- use the workplace technology related to document preparation, including computing systems and information management systems, calculators and measuring devices.

#### Required knowledge

- technical writing and presentation techniques.
- enterprise (or equivalent) technical procedure formats, content rules, preparation and management techniques.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Locate, interpret and apply information.
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment.
- Identify and itemise steps and stages covering confirmation of objective, research planning and conduct and report preparation.
- Complete a significant technical report covering:
  - detailed research of the topic area
  - a full analysis of the research outcomes
  - conclusions and recommendations clearly supported by the facts
  - satisfaction of legal, regulatory or intellectual property law requirements.
- Modify activities to cater for variations in research findings.
- Work effectively with others.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated activity.

Access to a significant technical research and reporting requirement, information sources and a working environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related and require portfolios or other forms of indirect evidence of process. Direct evidence will include acceptance of the final outcome/report by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other projects.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, safety management systems, hazardous substances and dangerous goods codes and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, environmental legislation, health regulations, authorised handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate conceptual ability, discretion, judgement and problem-solving skills.</li> </ul>
<b>Workplace environment</b>	<p>Work may involve individual and team related activities.</p> <p>Work may be carried out in a commercial, workshop, laboratory or research establishment.</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.</p>
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>Workplace procedures relating to reporting and communication.</li> <li>Vehicle industry publications related to emerging system technology and technology changes.</li> <li>Professional publications.</li> <li>Automotive research collections and access facilities.</li> <li>Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>Manufacturer/component supplier specifications, schematics and operational procedures related to systems.</li> <li>Australian Standards.</li> <li>Australian Design Rules.</li> <li>Vehicle industry regulations.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Common
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Foundation Skills
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## AURAF5007 Develop and document specifications and procedures

### Modification History

Release	Comment
Release 1	<p>Replaces AURT577620A Develop and document specifications and procedures</p> <p>Unit code updated to meet policy requirements.</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse requirements and to develop and document technical specifications and procedures providing concise and unambiguous direction and guidance for workplace activities.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit covers the work involved in the research for and writing of specifications and procedures for the workplace.</p> <p>Work requires individuals to demonstrate conceptual ability, discretion, judgement and problem-solving skills.</p> <p>Work may involve individual and team related activities and will normally relate to the standard forms of activity performed in the enterprise and industry.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify requirements	<ul style="list-style-type: none"><li>1.1.Information required for technical specifications and procedures is identified and assembled.</li><li>1.2.Specifications and procedures requirements and formats are established and confirmed, where necessary.</li><li>1.3.Requirements for information entry, storage, output and quality of document production are identified in accordance with enterprise procedures.</li><li>1.4.Specifications and procedures document design is appropriate for efficient entry of information and satisfies appearance and presentation requirements for the purpose of the document.</li><li>1.5.Range of functions incorporated in the document design reflects the nominated requirements.</li></ul>
2. Prepare specifications	<ul style="list-style-type: none"><li>2.1.Technical information for use in the specification is collected, tested and validated or confirmed before use.</li><li>2.2.Authoritative sources and references are identified and used in the preparation and presentation of the specification.</li><li>2.3.Specifications are written in a format, to ensure requirements can be met.</li><li>2.4.Specifications are written in a manner that is clear and understood in the workplace.</li><li>2.5.Specification documentation satisfies enterprise and industry standards.</li></ul>
3. Prepare technical procedures	<ul style="list-style-type: none"><li>3.1.Activities and tasks are identified, analysed and documented.</li><li>3.2.Activities and tasks are sequenced and logically grouped.</li><li>3.3.Procedures are documented to enterprise and industry standards.</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand technical information related to the specifications and procedures, testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to ensure the completeness, clarity and comprehension of the specifications and procedures by the target audience.
- plan and organise to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to incorporate measurements, calibration and test requirements into specifications and procedures.
- establish processes which anticipate and allow for risks, cater for both direct and indirect causes, avoid or minimise reworking and avoid wastage in the preparation and content of procedures.
- use the workplace technology related to document preparation, including calculators and measuring devices, computing systems and information management systems.

#### Required knowledge

- technical writing and presentation techniques.
- enterprise (or equivalent) technical procedure formats, content rules, preparation and management techniques.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Locate, interpret and apply information.
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment.
- Identify and itemise steps and stages in procedures.
- Complete a significant operational procedure, incorporating safety obligations, and covering:
  - a full analysis of the topic area
  - a step-by-step operational procedure
  - supporting documents to the procedure.
- Complete or review and update a specification for a significant system or sub-system covering:
  - system/sub-system description
  - components
  - materials
  - construction
  - circuitry
  - related information sources
  - legal, regulatory or intellectual property law requirements.
- Modify products to cater for variations in workplace cultures and environment.
- Work effectively with others.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility.

Access to systems requiring specification, activities requiring procedural coverage, related, technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related and require portfolios or other forms of indirect evidence of process. Direct evidence will include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not

**EVIDENCE GUIDE**

	<p>only to be satisfied under the particular circumstances, but is able to be transferred to other projects.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Specifications</b>	Specifications are technical criteria for an object, item, system or sub-system describing the components, materials, construction, circuitry and associated legal, regulatory or intellectual property issues.
<b>Procedures</b>	Procedures contain detailed descriptions of the tasks, activities, sequences, materials, tooling, rules and safety requirements leading or guiding an individual through an authorised work practice.
<b>Function</b>	The function is undertaken in accordance with established enterprise procedures and practices may include requirements recommended by manufacturer.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, safety management systems, hazardous substances and dangerous goods codes and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, environmental legislation, health regulations, authorised handling procedures and organisation insurance requirements.</li> </ul>
<b>Workplace environment</b>	Specifications and procedures may be used in established workshops or under external site conditions.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>Workplace procedures relating to the use of tooling and equipment.</li> <li>Workplace procedures relating to reporting and communication.</li> <li>Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>Manufacturer/component supplier specifications, schematics and operational procedures related to systems.</li> <li>Australian Design Rules.</li> <li>Vehicle industry regulations.</li> <li>Vehicle industry publications related to emerging system technology and technology changes.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Foundation Skills
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## AURAKA2001 Use information technology systems

### Modification History

Release	Comment
Release 1	Replaces AURA254180A Operate information technology systems Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit of competency covers the competence involved in the use and application of enterprise information technology systems.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	This unit requires knowledge of the hardware and software in use, and the ability to enter, retrieve and use information.  This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied:  retail, service and repair.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use enterprise information technology systems	<p>1.1. Knowledge of enterprise information technology systems is accurately demonstrated and conveyed to other staff members</p> <p>1.2. Hardware is accurately identified and operated according to manufacturer/component supplier instructions and enterprise procedures</p> <p>1.3. Software, including databases, menus and electronic data interchange (EDI), is accurately identified and used according to manufacturer/component supplier instructions and enterprise procedures</p> <p>1.4. Application and uses of available software is accurately identified and used according to enterprise procedures</p> <p>1.5. Data is transmitted according to EDI procedures</p> <p>1.6. Keyboard skills are used accurately to enter information according to enterprise policies</p> <p>1.7. Back-up procedures are regularly performed according to enterprise procedures</p>
2. Edit/update information	<p>2.1. Information to be edited/updated is correctly identified according to enterprise procedures</p> <p>2.2. Information on system is accurately edited/updated according to enterprise procedures</p>
3. Solve problems	<p>3.1. Equipment/hardware/software faults are identified and rectified where possible or expert assistance sought without delay</p> <p>3.2. Maintenance programs for hardware and software systems are monitored and implemented according to manufacturer/component supplier specifications and enterprise procedures</p> <p>3.3. Routine problems are handled using appropriate problem-solving techniques and referred to appropriate persons</p> <p>3.4. Assistance is positively and actively provided to staff as problems arise</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- plain English literacy skills in regard to interpreting documentation and completing reports or documents
- information is provided according to enterprise policies and procedures
- back up procedures are planned for data
- involve staff in dealing with information technology issues
- enterprise version control procedures are followed
- establish diagnostic processes which develop problem-solving skills related to hardware and software problems
- technical skills in the operation of enterprise information technology hardware and software and the use, application and operation of databases, menus and EDI

#### Required knowledge

- operational knowledge of enterprise policies and procedures in regard to use of enterprise information technology systems, including:
  - use and maintenance of hardware and software systems
  - solutions to problems/breakdowns
  - operation of equipment
- operational knowledge of legislation for WHS, including use of screen-based equipment

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies the ability to transfer the competence to changing circumstances and to respond to unusual circumstances in critical aspects of:

- consistently applying enterprise policies and procedures in regard to information technology systems, including resolution of systems faults and accessing/entering information on enterprise systems
- following requirements of legislation.

##### Context of and specific resources for assessment

- This unit should be assessed in conjunction with other units that form part of the job role or function.
- Elements of competence contain both knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated work environment.
- Evidence is best gathered using products, processes and procedures of the individual workplace context as the means by which the candidate achieves industry competencies.
- The following are required:
  - a workplace or simulated workplace
  - documentation, such as enterprise policies and procedures manuals relating to information technology systems, legislation requirements, industry codes of practice, and hardware and software manuals
  - information technology systems
  - a qualified workplace assessor.

#### Method of assessment

It is preferable that assessment reflects a process rather than an event and that it occurs over a period of time to cover varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Enterprise</b>	Enterprises may vary in size, type and location and in their range of products and services
<b>Information technology systems</b>	Information technology systems used may be centrally based, location-based or networked. Communications may be by network or by the internet
<b>Software</b>	Types of software may include: <ul style="list-style-type: none"> <li>• menus, databases or EDI</li> </ul>
<b>System problems</b>	System problems: <ul style="list-style-type: none"> <li>• may relate to hardware faults, breakdowns, software faults or staff abilities/training</li> <li>• may be solved by routine procedures, manufacturer/component supplier recommendations, lateral thinking or referral to a specialist/expert</li> </ul>
<b>Staff</b>	<ul style="list-style-type: none"> <li>• Staff may be full time, part time or casual and vary in terms of staff training, in staffing levels, e.g. staff shortages and in the range of responsibilities for information technology systems.</li> <li>• Staff may be operating in routine or busy trading conditions</li> </ul>
<b>Information</b>	Information to be entered may include: <ul style="list-style-type: none"> <li>• staffing information, customer details/records, including names, addresses and profiles, stock records, stock transfers, orders and delivery details</li> </ul>
<b>Equipment</b>	Equipment may include: <ul style="list-style-type: none"> <li>• a range of personal computers and computer terminals, which may be stand-alone or networked</li> <li>• information technology equipment such as scanning equipment, bar-coding equipment, point of sale terminals and pricing equipment</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• enterprise policies and procedures in regard to information technology systems</li> <li>• legislative requirements for WHS, particularly in regard to use</li> </ul>

**RANGE STATEMENT**

	of screen-based equipment, and may also include industry codes of practice
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**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Information Technology
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## AURAKA3002 Adapt work processes to new technologies

### Modification History

Release	Comment
Release 1	Replaces AURC361101A Adapt work processes to new technology Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to investigate the nature of new technologies and modify existing work processes and procedures to incorporate new technologies into the workplace.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Investigate the nature of the new technology	<ul style="list-style-type: none"><li>1.1.Training/information sessions are attended, to gain a full understanding of new technology</li><li>1.2.Technical sources are consulted to gain a full understanding of new technology</li><li>1.3.New technologies are analysed to determine their importance and value to the enterprise</li><li>1.4.Impact of new technologies on existing processes is analysed</li><li>1.5.Information about additional materials and equipment required to adopt the technology is communicated to staff</li></ul>
2. Modify existing work processes and procedures	<ul style="list-style-type: none"><li>2.1.Processes are modified to incorporate new technologies</li><li>2.2.Impact on workflow and productivity is minimised through effective planning and communication with staff</li><li>2.3.Staff are provided with training/information in the use of new technologies</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to adapting work processes to new technologies
- communicate ideas and information to supervisors related to adapting work processes to new technologies
- plan and organise activities adapting work processes to new technologies
- work with others and in a team by seeing and conveying information related to the planning, sequencing and completion of the task
- use mathematical ideas and techniques to count and measure
- establish diagnostic processes which adapts work processes to new technologies
- use the workplace technology related to adapting work processes to new technologies

#### Required knowledge

Knowledge of:

- enterprise existing activity, processes and procedures relevant to application
- cost-benefit analysis principles
- analytical skills, processes and procedures
- planning, communication and management skills, processes and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- investigating the nature of new technologies and modifying existing work processes and procedures to incorporate new technologies into the workplace.

##### Context of and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job.
- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- Prescribed outcome must be able to be achieved without direct supervision.
- The following should be made available:
  - technical information, hand tooling, specialised tooling and equipment.

#### Method of assessment

Practical assessments:

- research and adapt a process to a previously unknown technology
- train staff in use of a new technology
- compare costs and benefits of a current process and one which incorporates a new technology
- make a recommendation as to whether a given technology should be introduced to the workplace, taking into consideration the value to the enterprise of the change
- plan and implement the introduction of a new technology into the workplace, with provision to minimise the impact on workflow and productivity.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>• analysis of existing work practices</li> <li>• planning</li> <li>• communication</li> <li>• research</li> </ul>
<b>Processes which may be modified</b>	<p>Processes which may be modified could include:</p> <ul style="list-style-type: none"> <li>• work/repair sequence</li> <li>• WHS practices</li> <li>• administration and/or documentation</li> <li>• stock control</li> </ul>
<b>New technologies</b>	<p>New technologies which could be incorporated into the workplace include:</p> <ul style="list-style-type: none"> <li>• new equipment or tooling, base materials or automotive systems</li> </ul>
<b>Unit context</b>	<p>Workplace example:</p> <ul style="list-style-type: none"> <li>• a body repair involving a multi-layer paint system is encountered for the first time in the workshop. The technician contacts the paint supplier to gather information on the paint system. Other persons might also need to be contacted to gain an understanding of how to effect the repair, such as the paint manufacturer or industry contacts who may have encountered such a paint system before and/or employer bodies. Because normal 'blending' is not possible, alternative methods for colour matching need to be determined after gathering information</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• manufacturer/component supplier specifications</li> <li>• technical journals, including workshop</li> <li>• manuals, tune-up manuals</li> <li>• enterprise operating procedures</li> <li>• customer requirements</li> <li>• industry codes of practice</li> <li>• legislation</li> </ul>

**RANGE STATEMENT****WHS requirements**

WHS requirements may include:

- state/territory WHS legislation
- award provisions

**Unit Sector(s)****Unit sector**

Common

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Information Technology

## AURALA3001 Determine legal aspects of an automotive service and repair contract

### Modification History

Release	Comment
Release 1	Replaces AURA354616A Determine legal aspects of an automotive service and repair contract Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit of competency covers the competence to act within legal and ethical boundaries in dealing with customers and implement measures to avoid disputes and resolve those that do occur.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	This unit of competency applies to the legal and ethical operation in retail, service and repair. Methods include: <ul style="list-style-type: none"><li>• written and verbal communication</li><li>• researching requirements</li><li>• monitoring performance against requirements</li><li>• ensuring currency of requirements</li><li>• documentation.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Comply with service and repair contract and agreement legislation	1.1. Identify and comply with the rights and legal obligations of parties involved in a valid service and repair contract 1.2. Identify and comply with the legal liabilities of a repairer who performs service or repair work without a valid contract 1.3. Prepare draft documents that would form a valid contract for service and repair work in the automotive industry 1.4. Implement procedures to advise customers of the nature of the contract they are entering into requesting service and repair work to be undertaken 1.5. Implement procedures for staff to follow to ensure valid contracts are in place for all stages of work undertaken 1.6. Implement procedures to minimise liability or customer claims in relationship to bailment 1.7. Identify which regulatory bodies have authority to inspect the premises and the procedures for this to occur
2. Establish warranties in accordance with legal requirements and company policy	2.1. Ensure customer statutory rights have been protected 2.2. Ensure warranty documents have regard for fair trading principles 2.3. Ensure warranty interpretation is in accordance with company policy
3. Enforce contract in accordance with legal requirements and company policy	3.1. Develop company policy on payment terms for services rendered 3.2. Identify and observe different forms of liens and their applicability of the automotive industry 3.3. Identify and observe the legal rights and obligations of an automotive business in respect of the disposal or sale of uncollected vehicles or goods 3.4. Outline the legal procedure that should be followed for recovery of payment when a customer is in default of payment
4. Dispute resolution in the automotive industry	4.1. Implement procedures to minimise disputes with customers 4.2. Maintain necessary records to support positions in disputes with customers 4.3. Identify external sources of assistance in dispute resolution 4.4. Monitor customer disputes and resolutions to implement procedures for avoidance strategies

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to legal and ethical business dealings
- communicate ideas and information to customers and supervisors related to legal and ethical business dealings
- plan and organise activities related to legal and ethical business dealings
- work with others and in a team by observing and conveying information related to planning, sequencing and completion of the task
- use mathematical ideas and techniques to count and measure
- establish and utilise processes that identify appropriate methods related to legal and ethical business dealings
- use workplace technology related to legal and ethical business dealings

#### Required knowledge

- legal and ethical requirements related to contracts
- warranty rights and responsibilities of suppliers and repairers
- components of a valid contract
- written communication and report writing skills procedures
- oral communication skills procedures
- assessing vehicle damage and recommended repair methods
- dispute resolution techniques

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, Range Statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer the competence to changing circumstances and to respond to unusual situations in critical aspects of:</p> <ul style="list-style-type: none"> <li>• establishment and revision of model customer contracts</li> <li>• implementation procedures to avoid or deal with customer disputes</li> <li>• maintenance of customer records</li> <li>• identification of key components of a valid service and repair contract</li> <li>• establishment of an appropriate paper trail and records to verify actions taken in a dispute situation.</li> </ul>
<b>Context of and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• Underpinning knowledge may be assessed on or off the job.</li> <li>• Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. Assessment must take place in the workplace.</li> <li>• The prescribed outcome must be able to be achieved without direct supervision.</li> </ul>
<b>Method of assessment</b>	

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Resources

Resources may include:

- enterprise stationery, telephone and appropriate forms/business documents
- repair orders, job cards and invoices
- sample repair contracts
- computer, calculator and software
- customer records

#### Information/documents

Sources of information/documents may include:

- consumer legislation and regulation, including sections of the Trade Practices Act
- enterprise operating procedures
- product manufacturer/component supplier specifications and warranties
- customer requirements
- industry/workplace codes of practice
- state/industry WHS legislation
- contract law information relevant to automotive business
- company policy on payment terms
- industry association code of ethics

## Unit Sector(s)

#### Unit sector

Common

## Co-requisite units

Not applicable.

## Competency field

Competency field	Regulatory or Legal
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## AURAMA2001 Work effectively with others

### Modification History

Release	Comment
Release 1	Replaces AURC270688A Work effectively with others Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to organise self, perform tasks, behave responsibly and work effectively as a member of a work group or team.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to determination of work roles	<p>1.1. Work roles for each group or team member are identified based on information and instructions about objectives, performance requirements and procedures</p> <p>1.2. Contributions are made to assist in the determination of the roles and responsibilities for the successful completion of work activities</p>
2. Contribute to planning of activities	<p>2.1. Suggestions and information are provided to contribute to the planning of work activities and associated procedures</p>
3. Organise and accept responsibility for own workload	<p>3.1. Priorities and deadlines are established and documented in consultation with others</p> <p>3.2. Work activities are planned and progress of work is communicated to others whose personal work plans and timeframes may be affected</p> <p>3.3. Work is completed to the standard expected in the workplace in accordance with guidelines, directions and instructions</p> <p>3.4. Variations and difficulties affecting work requirements are identified through regular reviews and action is taken to report these issues to appropriate persons</p> <p>3.5. Additional support to improve work is communicated clearly to appropriate persons</p>
4. Maintain enterprise dress and grooming standards	<p>4.1. Enterprise and/or industry dress standards and requirements are maintained</p> <p>4.2. Enterprise and/or industry grooming standards are maintained</p>
5. Work with others	<p>5.1. Forms of communication appropriate to the work activities are used</p> <p>5.2. Assistance in the completion of activities is requested</p> <p>5.3. Support is provided to colleagues to ensure designated team goals are achieved</p> <p>5.4. Contributions to the achievement of a required outcome are made</p> <p>5.5. Work is undertaken in accordance with procedures on an individual and shared basis</p> <p>5.6. Problems are discussed and resolved where possible through agreed and accepted processes</p> <p>5.7. Suggestions for improvements to process are made and discussed within the team</p>
6. Participate in identifying	<p>6.1. Competencies for the workplace are identified</p>

ELEMENT	PERFORMANCE CRITERIA
and meeting own development needs	<p>6.2.Organisational structure, career paths and development opportunities are identified</p> <p>6.3.Steps are taken, in consultation with appropriate persons, to identify own learning needs through assessment and planning for future work requirements</p> <p>6.4.Opportunities to learn and develop required competencies are undertaken, including establishing networks and working relationships with others</p>
7. Work effectively and responsibly	<p>7.1.Notification of shift/work availability or non-attendance for shift/work is given without undue delay and according to enterprise policies and procedures</p> <p>7.2.Staff rosters are interpreted</p> <p>7.3.Non-discriminatory attitudes are displayed when interacting with customers, staff and management</p> <p>7.4.Non-discriminatory language is used consistently</p> <p>7.5.Awards/enterprise agreements are identified and interpreted</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information to follow routine procedures and directions
- communicate ideas and information to plain English literacy and communication skills in relation to reading and understanding workplace documents
- plan and organise activities to carry out routine tasks with limited supervision
- work with others and in a team by informing supervisor of issues which will affect timeframes and goals
- use mathematical ideas and techniques to estimate requirements of tasks
- establish diagnostic processes which use basic analytical, problem-solving, negotiation and conflict management skills in relation to working with others
- use workplace technology related to documenting work progress on computers/information systems

#### Required knowledge

General knowledge of:

- enterprise work procedures
- group dynamics and the impact of working effectively with others on individual and group performance
- enterprise work systems, equipment, management and facility operating systems
- enterprise policies and procedures and legislative requirements in regard to:
  - workplace ethics
  - work availability or non-attendance
  - staff rosters
  - dress and grooming
  - discriminatory behaviour
  - harassment
  - equal opportunity
  - staff counselling and disciplinary procedures
- industry awards or enterprise/ workplace agreements

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- organising and accepting responsibility for own workload
- following the designated work plan for the job
- contributing to collective planning, cooperative work and effective outcomes
- cooperating with others to complete work-oriented activities
- participating in identifying and meeting own development needs
- consistently applying enterprise and/or industry standards of dress and grooming
- consistently and responsibly applying enterprise policies and procedures in regard to workplace ethics, including interpretation of staff rosters, notification of availability for work and allocated duties/job description
- consistently applying enterprise policies and procedures and legislative requirements regarding non-discriminatory language and attitudes
- knowing own rights and responsibilities regarding awards/enterprise agreements.

##### Context of and specific resources for assessment

- This unit may be assessed in conjunction with other units that form part of the job role or function.
- Elements of competence contain both knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated work environment.
- Evidence is best gathered using the products, processes and procedures of the individual workplace as the means by which the candidate achieves industry competencies.
- The following should be made available:
  - a workplace or simulated workplace
  - documentation, such as enterprise or sample policies and procedures manuals related to ethics, employee and employer rights and responsibilities, dress and grooming,

<b>EVIDENCE GUIDE</b>	
	<p>discrimination, job descriptions and organisation charts</p> <ul style="list-style-type: none"><li>• legislation, such as equal employment opportunity, equal opportunity and anti-discrimination</li><li>• enterprise or sample awards and/or enterprise/ workplace agreements</li><li>• a qualified workplace assessor.</li></ul>
<b>Method of assessment</b>	<p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons, subject to agreed authentication arrangements.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Business types</b>	Enterprise may vary in size, type and location, the range of work activities conducted, hours of operation and the number and type of staff
<b>Staff</b>	Staff may: <ul style="list-style-type: none"> <li>• be full-time, part-time or casual and vary in terms of staff training and in staffing levels</li> <li>• be operating in routine or busy trading and may include persons from a range of social, cultural or ethnic backgrounds and physical and mental abilities</li> <li>• work in teams or groups of varying size and structure</li> </ul>
<b>Staff activities</b>	Activities may include: <ul style="list-style-type: none"> <li>• normal or routine work requirements or non-routine work requirements</li> </ul>
<b>Communication</b>	Communication may include: <ul style="list-style-type: none"> <li>• face to face, telephone, written or electronic means</li> </ul>
<b>Legislative requirements</b>	Legislative requirements may include: <ul style="list-style-type: none"> <li>• legislation or regulations in relation to WHS, equal opportunity, anti-discrimination, consumer law, trade practices and fair trading, industrial relations, and industry codes of practice</li> <li>• awards/agreements may include state/territory and federal industry awards and enterprise or workplace agreements</li> </ul>
<b>Policies and procedures</b>	Enterprise policies and procedures may relate to: <ul style="list-style-type: none"> <li>• organisational structure, work roles and responsibilities, career paths, work standards, dress and grooming standards, work objectives and performance requirements</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Management, Leadership and Supervision
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## AURAMA2002 Communicate business information

### Modification History

Release	Comment
Release 1	<p>Replaces AURC270889A Communicate business information</p> <p>Unit code updated to meet policy requirements.</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to communicate effectively with other persons in the automotive industry. This includes communicating verbally and in written form, participating in meetings, making presentations and conducting negotiations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competence has application in:</p> <ul style="list-style-type: none"><li>• day-to-day workplace communications</li><li>• workplace correspondence</li><li>• attending/conducting internal and external meetings</li><li>• making a presentation to others, either formally or informally</li><li>• conducting complex negotiations with a customer or supplier.</li></ul> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Communicate information orally	1.1.The purpose of oral communication is clarified with either the speaker or the listeners 1.2.A suitable oral communication style is selected to match the communication purpose and audience 1.3.Oral information given to others is delivered clearly, succinctly and unambiguously 1.4.Where oral information has been given to others, the received information is checked with the listeners to ensure it has been received and understood 1.5.Oral information received from others is listened to carefully and intently 1.6.Where oral information has been received from others, its meaning is checked with the speaker to ensure it has been received and understood 1.7.Where an oral communication has been received inaccurately, it is repeated and/or clarified with further detail
2. Communicate information in writing	2.1.The purpose of the written communication is clarified with either the writer or the reader 2.2.A suitable written communication style is selected to match the communication purpose and audience 2.3.Written information given to others is delivered clearly, succinctly and unambiguously 2.4.Where written information has been provided to others, the received information is checked with the readers to ensure it has been received and understood 2.5.Written information received from others is read carefully and intently 2.6.Where written information has been received from another, it is checked with the writer to ensure it has been read and understood 2.7.Where a written communication has been read inaccurately, further detail is sought to clarify the message
3. Achieve meeting outcomes	3.1.Purpose of a meeting is clarified with those participating 3.2.When a meeting is chaired, it is well-planned with a clear agenda, time and place of meeting, and the meeting is conducted efficiently in accordance with official law and procedures of meetings and constitution or requirements of the organisation concerned 3.3.Outcomes of a meeting are documented and official minutes of the meeting are promptly provided to all participants

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4.Required action flowing from decisions reached at a meeting is documented</p> <p>3.5.Persons responsible for implementing action from decisions at a meeting are promptly notified and details of the required action confirmed in writing</p> <p>3.6.Follow-up action is taken to ensure all decisions of a meeting are acted upon</p>
4. Make a presentation	<p>4.1.Purpose of a presentation is identified and clarified with organisers and confirmed with the intended audience</p> <p>4.2.Information to be communicated in a presentation is suitably organised and structured in accordance with company requirements</p> <p>4.3.Resources available for the presentation are discussed with the organisers and suitable media selected for use in the presentation</p> <p>4.4.Presentation aids, such as overhead projector transparencies, handouts, speech notes and demonstrations, are organised and prepared in advance, in accordance with recognised standards of good practice</p> <p>4.5.Resources such as projectors, microphones and amplifiers are checked prior to the presentation to ensure they are functioning properly</p> <p>4.6.Presentation is made as planned with attention to the reactions and feedback provided by the audience</p> <p>4.7.Outcomes of the presentation are evaluated and acted upon in accordance with company procedures</p>
5. Negotiate a solution	<p>5.1.Preparation is made for the negotiation in accordance with company procedures, including consideration of subject matter, significance of outcomes for parties involved, facts, issues and options, and perceived positions of the parties involved</p> <p>5.2.A suitable negotiation strategy is selected in accordance with company requirements, including the location, time and approach to be taken</p> <p>5.3.Negotiations are conducted in accordance with planned approach</p> <p>5.4.Negotiation outcomes are reviewed in terms of desired outcomes of both parties and suitable action initiated according to company requirements</p> <p>5.5.Follow-up action to the negotiations is carried out, including discussions with other parties</p> <p>5.6.Outcomes of the negotiation are documented in accordance</p>

ELEMENT	PERFORMANCE CRITERIA
	with company requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to the communication of business information to customers, supervisors and other staff or relevant persons
- communicate ideas and information to plain English speaking and communication skills in relation to oral communications with customers, supervisors and other staff both informally and in making formal presentations
- writing skills to allow effective written communications in the workplace
- effective listening and interpersonal skills to enable effective communication in meetings and negotiations
- plan and organise activities to plan a presentation and an approach for the negotiation of an issue
- work with others and in a team by communicating with and involve team members in presentations
- use mathematical ideas and techniques to ensure meetings and presentations meet planned timeframes
- establish diagnostic processes which negotiate a solution to an issue
- use the workplace technology related to ensure the use of business technology to make a presentation

#### Required knowledge

Knowledge of:

- common automotive and enterprise terminology
- the activities, procedures and policies of the enterprise
- the requirements for oral communication
- conventions and requirements for written communications
- preparation, conduct of and follow-up from meetings
- preparing for and conducting a presentation
- negotiating techniques and their application

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- conducting oral communication in the workplace
- communicating in writing
- achieving meeting outcomes
- conducting presentations
- negotiating issues in the workplace.

##### Context of and specific resources for assessment

- This unit may be assessed in conjunction with other units that form part of a job role or function.
- Elements of competence contain both knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated work environment.
- Evidence is best gathered using the products, processes and procedures of the individual workplace as the means by which the candidate achieves industry competencies.
- The following should be made available:
  - a workplace or simulated workplace
  - documentation, such as enterprise or sample policies and procedures related to work processes
  - real or simulated business information to be communicated
  - access to communication partners
  - a qualified workplace assessor.

#### Method of assessment

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Customers</b>	<p>Customers may be:</p> <ul style="list-style-type: none"> <li>• internal or external</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• work may be undertaken at any enterprise involved in the automotive industry</li> <li>• communication will occur within and between work groups and external to the enterprise at all levels</li> <li>• customer and supplier contact and coordination are a requirement of these operations</li> <li>• work may involve 24 hour operation at workplace or external locations</li> <li>• environment may be internal or external, administrative or industrial and may include movement of persons, equipment, goods, materials and vehicular traffic</li> <li>• the employee may work under general supervision, but may have some leadership/supervisory responsibilities</li> <li>• judgement and discretion in conducting workplace communication is required</li> <li>• conditions of service, legislation and industrial agreements may include workplace agreements and awards</li> <li>• WHS, including federal and state/territory legislation</li> <li>• consultative processes may include: <ul style="list-style-type: none"> <li>• other staff and supervisors</li> <li>• management</li> <li>• employee representatives</li> <li>• customers</li> </ul> </li> <li>• communications may be face to face, in writing, by telephone or other electronic means and may be formal or informal</li> <li>• documenting and reporting of information is in accordance with enterprise procedures and policies</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• operation manuals</li> <li>• quality or enterprise work specifications and procedures</li> <li>• manufacturer/customer requirements/issues</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• workplace operating procedures and policies</li><li>• material safety data sheets</li><li>• personal and work area work procedures and practices</li><li>• federal/state/territory legislation and codes of practice relating to the industry, dangerous and hazardous goods, environmental protection and WHS</li><li>• enterprise communications, management and inventory systems</li><li>• conditions of service and workplace agreements</li><li>• enterprise quality assurance procedures</li><li>• emergency procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Management, Leadership and Supervision
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## AURAMA3003 Conduct information sessions

### Modification History

Release	Comment
Release 1	Replaces AURC359350A Conduct information sessions Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit of competency covers the competence required to present technical and other information in structured sessions.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied: <ul style="list-style-type: none"><li>• retail, service and repair.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
1. Prepare for session	1.1. Specific need to be met by the information session is confirmed 1.2. Arrangements are made for the time, place and duration of the session 1.3. Equipment, tooling and/or other resources required are organised to be available 1.4. Information is planned to be presented in a logical sequence
2. Present session	2.1. Participants are made aware of the reason for the session and relevance of information being presented 2.2. Information is presented clearly, with demonstration
3. Follow up outcomes of session	3.1. Participants are encouraged to raise questions on any aspect of the information session 3.2. Participant reactions to the session are sought and feedback is used to guide future presentation 3.3. Actions required as a result of the session are carried out

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to a presentation
- communicate ideas and information to conducting an information session
- plan and organise activities for an information session
- work with others and in a team by involving team members in the information session
- use mathematical ideas and techniques to ensure times are allocated and followed in the information session
- establish diagnostic processes which analyse issues raised and recommend solutions during the information session
- use workplace technology related to conducting information session

#### Required knowledge

Knowledge of:

- adult learning principles
- effective presentation techniques
- information session planning procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- presentation of technical and other information in structured sessions.

#### Context of and specific resources for assessment

- The underpinning knowledge and skills may be assessed on or off the job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be achieved without direct supervision.
- The following should be made available:
  - a workplace or simulated workplace
  - situations requiring information sessions
  - group of persons for the presentation
  - equipment, information, materials, and tooling
  - a qualified workplace assessor
  - technical training information.

#### Method of assessment

Practical assessments:

- plan and conduct information sessions on a range of topics, and include demonstration.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods include: <ul style="list-style-type: none"> <li>mentoring and training</li> </ul>
<b>Information sessions</b>	Information sessions may relate to: <ul style="list-style-type: none"> <li>technical information, WHS and enterprise policies or procedures</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>enterprise operating procedures</li> <li>product manufacturer/component supplier specifications</li> <li>customer requirements</li> <li>industry/workplace codes of practice</li> </ul>
<b>WHS practices</b>	WHS practices must comply with: <ul style="list-style-type: none"> <li>state/territory WHS legislation</li> <li>award provisions</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Common
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Management, Leadership and Supervision
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## AURAMA3004 Maintain business image

### Modification History

Release	Comment
Release 1	Replaces AURC363337A Maintain business image Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to maintain staff dress and grooming standards, maintain the physical appearance of the workplace, implement waste disposal processes, and promote business products and services.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Maintain physical appearance of the workplace	1.1.Cleanliness and tidiness of the workplace is maintained in accordance with industry and/or enterprise standards of workplace health and safety (WHS) 1.2.Workplace is free of rubbish and waste in accordance with industry, WHS and enterprise requirements 1.3.Standards of cleanliness are communicated to staff in accordance with enterprise procedures 1.4.Customer reception area is maintained to enterprise standards 1.5.Defined areas for specific tasks are created and maintained to enterprise requirements 1.6.Facilities and equipment maintenance is planned and regularly carried out 1.7.Enterprise image and signage is displayed consistently throughout the organisation
2. Maintain enterprise dress and grooming standards	2.1.Expectations regarding dress and grooming are communicated to staff on a regular basis 2.2.Standards are updated as needs arise according to enterprise requirements 2.3.Dress and grooming of staff are monitored to ensure standards are met 2.4.Breaches of standards are identified and corrected
3. Implement waste disposal processes	3.1.Waste disposal is monitored to ensure compliance with environmental, WHS, industry and enterprise requirements 3.2.Recycling opportunities are identified and implemented in accordance with environmental legislative, industry and enterprise standards 3.3.Environment Protection Authority documents are maintained
4. Promote products and services provided by the business	4.1.Promotional activities are implemented as planned according to enterprise policies and industry and legal requirements 4.2.Products/services are sold to highest quality level according to enterprise policies, manufacturer/component supplier specifications, industry and legal requirements 4.3.Sales promotions/campaigns are actively supported

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to enterprise expectations
- communicate ideas and information to ensure staff are advised of enterprise requirements
- plan and organise activities for waste disposal processes
- work with others and in a team by using a team approach to maintain workplace appearance
- use mathematical ideas and techniques to budgets associated with sales campaigns
- establish diagnostic processes to resolve environmental issues
- use the workplace technology related to promote products and services

#### Required knowledge

Knowledge of:

- WHS requirements within the state/territory of operation
- industry and enterprise standards and requirements regarding physical appearance of the workplace, dress and grooming
- industry and enterprise standards regarding waste disposal processes
- enterprise standards regarding promotion of services and products
- environmental protection authority regulations and guidelines
- advertising codes and requirements for ethical advertising practices
- legal obligations and requirements

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- maintaining staff dress and grooming standards
- maintaining the physical appearance of the workplace
- implementing waste disposal processes
- promoting business products and services.

##### Context of and specific resources for assessment

- The underpinning knowledge and skills may be assessed on or off the job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The following should be made available:
  - a workplace or simulated workplace
  - enterprise or equivalent policy and procedures
  - enterprise stationery, forms/business documents
  - a qualified workplace assessor.

#### Method of assessment

Practical assessments:

- address staff breaches of dress and grooming standards
- complete Environmental Protection Authority (EPA) paperwork
- maintain the physical appearance of the worksite
- maintain enterprise dress and grooming standard
- implement waste disposal processes
- promote products and services provided by the business.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods include: <ul style="list-style-type: none"> <li>written and verbal communication</li> </ul>
<b>Defined areas for specific tasks</b>	Defined areas for specific tasks may include: <ul style="list-style-type: none"> <li>lunchrooms</li> <li>work areas for specific tasks (e.g. paint, electrical, transmission and wheel alignment)</li> <li>warehouse areas</li> <li>office/administration areas</li> <li>workshop bays</li> </ul>
<b>Waste</b>	Waste may include: <ul style="list-style-type: none"> <li>materials</li> <li>products</li> <li>parts</li> <li>consumables</li> </ul>
<b>Corrective actions</b>	Corrective action to breaches of dress and grooming standards may include: <ul style="list-style-type: none"> <li>individual or group staff counselling, notices or memos</li> </ul>
<b>Standard clothing</b>	Standard clothing may include: <ul style="list-style-type: none"> <li>overalls</li> <li>shirts</li> <li>jacket</li> <li>trousers</li> <li>work safety or waterproof footwear</li> <li>ear plugs/muffs</li> <li>safety goggles</li> <li>other personal protection equipment</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>enterprise operating procedures</li> <li>product manufacturer/component supplier specifications</li> <li>customer requirements</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• industry/workplace codes of practice</li></ul>
<b>WHS requirements</b>	WHS requirements may include: <ul style="list-style-type: none"><li>• state/territory industry WHS legislation</li><li>• award provisions</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Management, Leadership and Supervision
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## AURAMA4005 Manage complex customer issues

### Modification History

Release	Comment
Release 1	Replaces AURC463238B Manage complex customer issues Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to resolve complex customer complaints or issues.</p> <p>It requires the ability to communicate effectively and make an informed judgement.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who are required to manage and resolve complex customer issues in an automotive environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Examine the nature of the issue	1.1. Ascertain all facts relating to the issue 1.2. Use effective communication to understand customer feelings and opinions 1.3. Determine enterprise and/or supplier policies relating to the issue
2. Exercise judgement to resolve the issue	2.1. Determine implications of the issue for the customer and organisation 2.2. Analyse and negotiate options for resolution with the customer in accordance with legislative requirements and enterprise policies 2.3. Refer matters for which a solution cannot be negotiated to management
3. Document issue and outcome	3.1. Report outcome of the issue to management 3.2. Incorporate issue and outcome into customer feedback system

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology to manage, resolve and record customer issue
- communication skills to the level required to listen effectively to a customer complaint, negotiate effectively to resolve the issue and communicate effectively with the supervisor and other workers, and to relate to people from a range of social, cultural and ethnic backgrounds, and of varying physical and mental abilities
- literacy skills to the level required to identify and understand information related to the issue, the enterprise procedures to resolve issues, and to prepare a report on the issue and outcome
- numeracy skills to the level required to undertake any calculations related to the complex issue management
- problem-solving skills to the level required to undertake diagnostic processes that lead to a solution to the complex customer complaint
- team skills to the level required to seek advice from others to lead to a solution to the complex customer issues

#### Required knowledge

Required knowledge includes:

- negotiation and problem-solving strategies
- industry codes of conduct
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS), personal safety and environment, relevant to resolving complex customer complaints
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to resolving complex customer complaints

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- understand and follow enterprise procedures to resolve customer complaints
- use a planned approach to resolve the complaint
- determine the facts and implications of the issue for both the customer and the organisation
- resolve the customer complaint to the satisfaction of both the customer and the enterprise
- document the resolved issue according to workplace procedures.

##### Context of and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - details of a range of complex customer complaints
  - workplace procedures related to customer service
  - legislation and codes of practice
  - computer hardware and software, calculators and general office equipment.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

	<p>performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Complex issues

Complex issues may include:

- cost issues
- warranty issues
- policy matters
- commercial decisions taken
- code of practice adherence
- work standards
- time taken or time expected to repair
- selection of parts

#### Options for resolution

Options for resolution may include:

- rework
- reduced fee for work completed/agreed
- additional services for free/reduced fee
- referrals to other suppliers

#### Workplace procedures

Workplace procedures may include:

- customers issue resolution process and procedures
- industry and workplace codes of practice
- product manufacturer and component supplier specifications
- industry and workplace codes of practice

#### Legislative requirements

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Management, Leadership and Supervision
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## AURAMA5006 Contribute to business improvement

### Modification History

Release	Comment
Release 1	Replaces AURC561614A Contribute to business improvement Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to contribute to the budget process, manage expenses in order to maintain levels of profitability within the specific area of responsibility, and contribute to the planning of business promotions.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to the setting of budgets and targets	1.1.Information for budgets and targets is collected within agreed timeframes 1.2.Budget and targets are set to achieve required levels of financial and business performance 1.3.Hourly rate is calculated based on business costs and margins, according to enterprise requirements 1.4.Expenditure requirements are agreed with appropriate persons, and provision is made in targets 1.5.Provision for unplanned costs is included in annual budget
2. Manage income and expenses	2.1.Expenditure and income for jobs is monitored on a regular basis 2.2.Financial information on jobs is collected on a regular basis and compared to budget 2.3.Corrective action for budget discrepancies is implemented 2.4.Invoices are prepared within timeframes according to industry and/or enterprise standards 2.5.Performance against budgets is monitored on a regular basis, and options for corrective action are discussed with management 2.6.Assistance is provided in the resolution of disputed accounts according to industry and/or enterprise standards and procedures for dispute resolution
3. Contribute to planning of business promotions	3.1.Promotional strategies are regularly reviewed with management 3.2.Adjustments to promotional strategies are discussed and agreed with management 3.3.New stock and/or display equipment required to support promotions is identified and arranged in a timely fashion 3.4.Displays are arranged to enhance enterprise image

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to contributing to business improvement
- communicate ideas and information to customers and supervisors related to contributing to business improvement
- plan and organise activities related to contributing to business improvement
- work with others and in a team by seeing and conveying information related to the planning, sequencing and completion of the task
- use mathematical ideas and techniques to count and measure
- establish diagnostic processes which identify methods related to contributing to business improvement
- use the workplace technology related to contributing to business improvement

#### Required knowledge

Knowledge of:

- accounting principles
- how to set a budget
- hourly rate components, based on general industry models/formulas
- responses to a range of budget and target situations in the workplace
- marketing concepts and principles

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- contributing to the budget process, managing expenses in order to maintain levels of profitability within the specific area of responsibility, and contributing to the planning of business promotions.

##### Context of and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job.
- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- Prescribed outcome must be able to be achieved without direct supervision.
- The following should be made available:
  - enterprise stationery, telephone, forms/business documents.

##### Method of assessment

Practical assessments:

- calculate and review hourly rate, based on supplied business costs and margins
- discuss current budget status, based on provided data
- achieve department budgets
- discuss strategy for treatment of debtors and bad debts
- prepare analysis of current enterprise/department promotional strategies and recommendations for adjustments.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>• written and verbal communication</li> <li>• planning</li> </ul>
<b>Budgets and targets</b>	<p>Budgets and targets may be for:</p> <ul style="list-style-type: none"> <li>• finances</li> <li>• sales</li> <li>• stock throughput</li> <li>• work won</li> </ul>
<b>Financial information</b>	<p>Financial information may include:</p> <ul style="list-style-type: none"> <li>• hourly rate components</li> <li>• expenditure on jobs, at hourly rate</li> <li>• income from jobs, at hourly rate</li> <li>• supplier invoices</li> <li>• stock documents</li> </ul>
<b>Unplanned costs</b>	<p>Unplanned costs may include:</p> <ul style="list-style-type: none"> <li>• accident</li> <li>• burglary/loss</li> <li>• damage</li> </ul>
<b>Business or department income</b>	<p>Business or department income may be sourced from:</p> <ul style="list-style-type: none"> <li>• retail labour sales</li> <li>• component sales</li> <li>• accessories and other items</li> <li>• margins on sublet jobs</li> <li>• government employment incentives</li> </ul>
<b>Business costs and margins</b>	<p>Business costs and margins may include:</p> <ul style="list-style-type: none"> <li>• general expenses</li> <li>• fixed expenses</li> <li>• on costs</li> <li>• rework component</li> <li>• profit margins</li> </ul>

**RANGE STATEMENT**

<b>Corrective action</b>	Corrective action in response to budget discrepancies may include: <ul style="list-style-type: none"> <li>• reassessing budget</li> <li>• reducing costs</li> <li>• changing procedures</li> </ul>
<b>Business promotions</b>	Business promotions may relate to: <ul style="list-style-type: none"> <li>• regular advertising</li> <li>• special campaigns</li> </ul>
<b>Displays</b>	Displays may include: <ul style="list-style-type: none"> <li>• stock and other merchandise</li> <li>• enterprise signage</li> <li>• promotional and advertising material</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• enterprise operating procedures</li> <li>• product manufacturer/component supplier specifications</li> <li>• customer requirements</li> <li>• industry/workplace codes of practice</li> </ul>
<b>WHS requirements</b>	WHS requirements may include: <ul style="list-style-type: none"> <li>• state/territory WHS legislation</li> <li>• award provisions</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Management, Leadership and Supervision
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## AURANN4001 Prepare a vehicle repair quotation

### Modification History

Release	Comment
Release 1	Replaces AURC465349B Prepare a vehicle repair quotation Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to prepare a written vehicle repair quotation.</p> <p>It requires the ability to use numeracy and literacy skills to identify and document the costs.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who are required to prepare vehicle repair quotations in the vehicle repair and vehicle loss assessing industries. Vehicles may include light vehicles, heavy vehicles, agricultural and plant equipment, recreational boats, recreational vehicles and motorcycles.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information	1.1. Clarify the particular service required 1.2. Locate information sources 1.3. Gather any job cost estimation and calculation details 1.4. Obtain labour unit cost projections 1.5. Identify enterprise quotation elements and procedures
2. Estimate, cost and prepare vehicle repair quotation	2.1. Estimate and cost required parts and materials 2.2. Estimate and cost direct labour and subcontractor services 2.3. Estimate and cost overheads and mark-up percentages in accordance with enterprise procedures 2.4. Note potential quotation variations 2.5. Prepare a legible and accurate quotation using the enterprise approved format 2.6. Verify final costs, calculations and other details with relevant enterprise person
3. Present quotation to customer	3.1. Present verbal and written report to customer 3.2. Gain approval to complete repairs from customer 3.3. Complete documentation and file quotation as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use the internet and other workplace technology related to preparing a vehicle repair quotation
- communication skills to the level required to verify costs with others, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds, and of varying physical and mental abilities
- literacy skills to the level required to undertake costing research and to document and report findings
- numeracy skills to the level required to estimate and calculate labour, materials and on-costs and to validate work costs
- problem-solving skills to the level required to anticipate costing problems and to avoid reworking, wastage, and planning and scheduling problems
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- methods and processes for identifying, apportioning, summarising and validating total costs for work
- components of labour costs
- current assessing and quoting methodologies
- commercial approaches to warehousing and physical distribution and costing
- manufacturer and component supplier specifications and manuals, including costing catalogues
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS), personal safety and environment, relevant to calculating vehicle repairs
- organisational policies and procedures, including quality requirements, reporting and recording procedures, related to calculating vehicle repair costs

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- select appropriate methods and techniques
- interpret proposals, specifications and instructions for the work
- obtain information relevant to the determination of costs
- calculate and cost accurately the quantities of parts and materials, the amount of labour and time required to complete the work and overheads for a range of vehicle repair quotes
- document the process and outcomes in accordance with enterprise practice.

#### Context of and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - vehicles requiring repair that can be used for quotations
  - appropriate worksite and costing details
  - manufacturer and component costs, labour rates, commercial and industry information
  - Repair Times manuals
  - equipment, including calculators, computer, internet and software
  - enterprise procedures.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Quotation</b>	<p>Quotation may include:</p> <ul style="list-style-type: none"> <li>• customer details</li> <li>• vehicle details</li> <li>• work to be performed</li> <li>• details of costs, including labour</li> <li>• legible and accurate documentation using the enterprise-approved format</li> </ul>
<b>Overhead costs</b>	<p>Overhead costs may include:</p> <ul style="list-style-type: none"> <li>• rental and leasing costs</li> <li>• utilities</li> <li>• non-production resources</li> <li>• depreciation of plant and equipment</li> <li>• warehousing margins</li> <li>• warehousing costs</li> <li>• insurance and other costs incurred by doing business</li> <li>• material/supply costs, including catalogues, contracts, standing agreements, market rates and warehousing margins</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• Motor Vehicle Insurance and Repair Industry Code of Conduct</li> <li>• verbal, written and graphical instructions</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures for inspection of vehicles for saleable components</li> <li>• engineer's design specifications and instructions</li> <li>• workplace specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> <li>• current driver's licence</li> </ul>

**RANGE STATEMENT****Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- duty of care

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- road rules
- safe driving policy

**Environmental requirements**

Environmental requirements may include:

- waste management
- noise
- dust
- clean-up management

**Organisational policies and procedures**

Organisational policies and procedures may include:

- financial management policies and procedures
- cost and apportioning overheads policies and procedures
- labour employment costs, including awards and contracts
- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Loss Assessment or Repair Quoting - Body
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## AURAQA2001 Contribute to quality work outcomes

### Modification History

Release	Comment
Release 1	Replaces AURC261314A Contribute to quality work outcomes Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit of competency covers the competence for the individual to be involved in the achievement of quality work outcomes and environmental compliance throughout work activities.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for quality work outcomes	1.1. Quality procedures are identified from worksite/enterprise and team quality requirements 1.2. Performance indicators for individual work are identified and agreed with the appropriate persons 1.3. Work plans and processes which facilitate the achievement of quality work outcomes are adopted
2. Comply with environmental requirements	2.1. Environmental requirements for the work are interpreted and considered as a factor in work planning/preparation 2.2. Environmental monitoring and control procedures are implemented during the work processes 2.3. Environmental incidents and potential problems are identified and responded to or referred to others in accordance with worksite requirements
3. Achieve and maintain quality work outcomes	3.1. Responsibility for monitoring quality of outputs is accepted and changes implemented by the individual, in accordance with worksite procedures 3.2. Performance indicators are monitored, adjusted and agreed to meet changing circumstances 3.3. Loss and damage incidents are minimised by monitoring work processes, reporting incidents and applying local risk control processes 3.4. Procedural improvements and/or recommendations are communicated to relevant persons

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to researching and interpretive skills to locate, interpret and apply operational quality and environmental information
- questioning and active listening skills, e.g. when obtaining information on quality and environmental working practices
- plain English literacy and communication skills in relation to dealing with others involved in the work
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret symbols used for quality and environmental signage
- plan and organise activities to plan performance indicators for individuals
- work with others and in a team by involving team members in recommendations for improvement
- use mathematical ideas and techniques to estimate value of improvements or costs of continuing with present procedures
- establish diagnostic processes which include basic problem-solving skills to assess quality and environmental issues
- use workplace technology related to the use of business technology

#### Required knowledge

General knowledge of

- quality systems in a workplace
- typical loss and damage control systems
- environmental legislative framework and licence provisions
- work planning processes
- workplace health and safety (WHS) regulations/requirements, equipment, material and personal safety requirements
- enterprise quality systems and processes
- worksite environmental procedures and key constraints
- worksite environment control measures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- identifying quality procedures and needs
- identifying individual performance indicators
- monitoring and adjusting performance indicators to meet changing circumstances
- satisfying performance indicators
- applying environmental control systems
- processing recommendations for change
- communicating effectively with others involved in or affected by the work.

#### Context of and specific resources for assessment

- This unit may be assessed in conjunction with other units which form part of a work role
- Assessment of this unit may be completed on the job or in a simulated work environment which reflects a range of quality processes and procedures
- The following should be made available:
  - a workplace or simulated workplace
  - situations requiring quality and environmental working practices
  - worksite or equivalent instructions on quality and environmental working practices
  - hazardous chemicals and/or dangerous goods information
  - materials, tooling and equipment and may include stationery, forms, business documents, job cards, internal memoranda and file notes.

#### Method of assessment

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying work process circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Quality procedures</b>	<p>Quality procedures may be contained in:</p> <ul style="list-style-type: none"> <li>• worksite quality system documentation, work instructions, safe work procedures, product specifications, equipment maintenance schedules, technical procedures and adopted or specifically prepared standards</li> </ul>
<b>Performance indicators</b>	<p>Performance indicators are to account for issues of time, quantity, quality and cost factors and may include:</p> <ul style="list-style-type: none"> <li>• establishing time targets for own work, identifying reasonable criteria for evaluating own work outcomes, identifying measures to avoid wastage, identifying reasonable criteria to judge internal and/or external customer satisfaction and identifying processes to ensure a 'right first time' approach</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements include:</p> <ul style="list-style-type: none"> <li>• state/territory legislation related to WHS and Australian Design Rules</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are those established under law and by the enterprise, and coverage may include:</p> <ul style="list-style-type: none"> <li>• dust control, water quality, wastewater management, chemicals handling, noise/vibration, fuel/oil handling and disposal, waste management and rehabilitation</li> </ul>
<b>Environmental control measures</b>	<p>Environmental control measures may include:</p> <ul style="list-style-type: none"> <li>• chemical management, dust suppression, water treatment, waste water processes, application of materials, compliance with noise/vibration standards and application of waste disposal procedures</li> </ul>
<b>Environmental reports and documents</b>	<p>Environmental reports and documents may include:</p> <ul style="list-style-type: none"> <li>• complaints register and incidental reporting procedures</li> </ul>
<b>Loss and damage incidents</b>	<p>Loss and damage incidents may include:</p> <ul style="list-style-type: none"> <li>• personal injury, loss and damage of plant, equipment and materials</li> </ul>

**RANGE STATEMENT**

<b>Communications</b>	Communications may be: <ul style="list-style-type: none"><li>• verbal, written, by telephone or by other means</li></ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"><li>• manufacturer/component supplier specifications, enterprise operating procedures, supplier directories, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets (MSDS) and HAZCHEM specifications</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Quality
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## AURAQA3002 Inspect technical quality of work

### Modification History

Release	Comment
Release 1	Replaces AURC361230A Inspect technical quality of work Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to inspect work done by other staff, apply quality standards to work, and protect customer property and interests.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information to carry out inspection	1.1. Workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs are observed throughout the work 1.2. Information, such as Australian Design Rules, workshop manuals and specifications, are sourced 1.3. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.4. Technical and/or calibration requirements for inspection are sourced and support equipment is identified and prepared
2. Inspect work	2.1. Work is identified and confirmed for inspection in accordance with worksite procedures 2.2. Inspections are conducted to ensure in-house quality systems and procedures are maintained/followed in accordance with worksite and quality procedures 2.3. Level of observation and inspection conducted is appropriate to the skill/experience of the employee 2.4. Faults identified are brought to the relevant person's attention in accordance with worksite procedures
3. Apply quality standards to work	3.1. Inspections are conducted throughout the course of the work to ensure quality standards are maintained 3.2. Quality standards are applied during work completion to ensure the treatment of customer property meets industry and/or enterprise standards 3.3. Activities are coordinated throughout the workplace in accordance with worksite procedures 3.4. Documents of work quality are maintained according to worksite requirements
4. Achieve quality work outcomes	4.1. Damage to customer property is avoided through ensuring staff adherence to quality procedures and use of protective materials at all stages of the repair/service 4.2. Quality improvements and/or recommendations are communicated in accordance with worksite requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research and interpretive skills sufficient to locate, interpret and apply manufacturer procedures, workplace policies and procedures
- analytical skills required for the identification and analysis of technical information
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information of technical quality working practices
- as applied to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interacting effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- such as number and space and techniques, estimation and approximation, for practical purposes
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and the desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- combine the physical and sensory skills needed to operate equipment with understanding of scientific and technological principles needed to explore and adapt systems

#### Required knowledge

Knowledge of:

- quality systems in a workplace
- common automotive terminology
- vehicle safety requirements
- work planning processes
- WHS regulations/requirements, equipment, material and personal safety requirements
- enterprise quality systems and procedures
- worksite environmental control measures
- worksite reporting procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- identifying and assessing hazardous situations and rectifying, or reporting to the relevant persons
- applying WHS policies and procedures
- identifying quality procedures
- inspecting work undertaken by others
- applying quality standards to work
- communicating improvements
- processing recommendations for change.

##### Context of and specific resources for assessment

- This unit will normally need to be assessed as a discrete entity. Performance may involve the application of a range of contributory competencies
- Assessment of this unit must be completed on the job or in a simulated work environment which reflects a range of quality processes and procedures
- The prescribed outcome must be able to be achieved without direct supervision
- The competence should be assessed within the context of the qualification being sought
- The following should be made available:
  - a workplace or simulated workplace
  - situations requiring inspections of technical quality
  - worksite or equivalent instructions on quality working practices and/or standards
  - computer hardware and software, access to electronic communication
  - access to information.

#### Method of assessment

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality

**EVIDENCE GUIDE**

circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Evidence of being able to:

- access, interpret and apply service information
- identify inspection requirements
- use service tooling and equipment
- observe safety procedures and requirements
- provide customer service
- prepare service reports
- communicate with customers orally and in writing
- maintain workplace documents.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Quality procedures</b>	<p>Quality procedures may be:</p> <ul style="list-style-type: none"> <li>contained in worksite quality system documentation, work instructions, safe work procedures, product specifications, equipment maintenance schedules, technical procedures, and adopted or specifically prepared standards</li> </ul>
<b>Quality inspections</b>	<p>Quality inspections may include:</p> <ul style="list-style-type: none"> <li>periodic inspection during the job or observation at completion of the job to ensure all ordered parts have been fitted, components used meet manufacturer/component supplier specifications, invoicing complies with service/repair/parts order and contains sufficient details of labour and/or components used, reported and diagnosed problems have been confirmed as rectified via test procedures and presentation of the vehicle or equipment after service/repair meets manufacturer and enterprise standards</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements may include:</p> <ul style="list-style-type: none"> <li>state/territory WHS legislation, manufacturer/ component supplier specifications and safe operating procedures</li> <li>environmental requirements, manual handling procedures and insurance requirements</li> </ul>
<b>Performance indicators</b>	<p>Performance indicators are to account for:</p> <ul style="list-style-type: none"> <li>issues of time, quantity, quality and cost factors and may include establishing time targets for own work, identifying reasonable criteria for evaluating own work outcomes, identifying measures to avoid wastage, identifying reasonable criteria to judge internal and/or external customer satisfaction and identifying processes to ensure a 'right first time' approach</li> </ul>
<b>Loss and damage incidents</b>	<p>Loss and damage incidents may include:</p> <ul style="list-style-type: none"> <li>personal injury, and loss and damage of plant, equipment and materials</li> </ul>
<b>Communications</b>	<p>Communications may be:</p> <ul style="list-style-type: none"> <li>verbal, written or by telephone or electronic means</li> </ul>

**RANGE STATEMENT****Information/documents**

Information/documents may include:

- manufacturer/component supplier specifications, enterprise operating procedures, supplier directories, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets (MSDS) and HAZCHEM information

**Unit Sector(s)****Unit sector**

Common

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Quality

## AURAQA3003 Maintain quality systems

### Modification History

Release	Comment
Release 1	Replaces AURC361337A Maintain quality systems Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor Application of the unit added Critical Aspects updated

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to conduct the final quality check on completed work or orders, report on the quality of processes and work outcomes, and implement improvements to work processes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the conduct of final quality checks on work/orders, reporting on quality process and implementation of improvements to work processes. This includes seeking input from staff and providing feedback on quality of work.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Conduct final quality check on completed work/orders	<ul style="list-style-type: none"><li>1.1. Completed work/orders are checked for compliance with supplier, enterprise or customer specifications</li><li>1.2. Level of inspection conducted is appropriate to the size and importance of the job</li><li>1.3. Documentation is authorised in accordance with enterprise requirements</li><li>1.4. Feedback is provided to staff on the quality of their work with equal emphasis on strengths and weaknesses and opportunities for development</li></ul>
2. Report on the quality of processes and work outcomes	<ul style="list-style-type: none"><li>2.1. Documents are kept according to enterprise quality systems on outcomes of quality checks</li><li>2.2. Quality problems are identified according to enterprise performance indicators</li><li>2.3. Information relating to the quality of processes and work outcomes is provided to appropriate persons on a regular basis</li></ul>
3. Implement improvements to work processes	<ul style="list-style-type: none"><li>3.1. Staff input is encouraged to generate possible solutions to quality problems</li><li>3.2. Options for solving quality problems are generated and the costs and benefits of each option are evaluated</li><li>3.3. Recommended solutions to quality problems are discussed with management</li><li>3.4. Improvements to work processes are implemented according to enterprise policies and procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research and interpretive skills to locate, interpret and apply quality audit policies and procedures
- investigative and analytical skills required for identification and analysis of quality breaches, incidents or risks, and identification of quality related training needs
- English literacy and communication skills in relation to dealing with customers and team members on worksite quality audit issues
- questioning and active listening skills, for example when obtaining information of worksite operational and quality issues
- written communication skills sufficient to prepare reports, document investigations and maintain worksite quality documents
- plan and organise activities for leadership skills required in organising, implementing and promoting worksite quality systems and measures
- work with others and in a team by seeking advice and assistance from team members
- use mathematical ideas and techniques to document quantities and enterprise sampling procedures
- establish diagnostic processes which analyse problems and recommend solutions
- use the workplace technology related to document and analyse quality problems

#### Required knowledge

Knowledge of:

- quality systems and application techniques in a work environment
- typical loss and damage control systems
- work planning and organisation processes
- workplace health and safety (WHS) regulations/requirements, equipment, material and personal safety requirements at the worksite
- enterprise quality systems and procedures
- worksite information management systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment

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Guidelines for the Training Package.

**Overview of assessment****Critical aspects for assessment and evidence required to demonstrate competency in this unit**

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- communicating effectively with others involved in or affected by the work
- identifying quality system procedures and needs
- identifying performance indicators
- conducting final quality checks on completed work orders
- reporting on the quality of processes and work outcomes
- processing and implementing recommendations for change.

**Context of and specific resources for assessment**

- This unit may be assessed in conjunction with units which form part of the normal job role
- Assessment of this unit must be completed on the job or in a simulated work environment which reflects a range of quality processes and procedures
- The following should be made available:
  - a workplace or simulated workplace
  - situations requiring worksite quality systems maintenance
  - worksite quality policies and procedures
  - worksite quality documents system
  - personnel
  - materials, tooling and equipment
  - a qualified workplace assessor.

**Method of assessment**

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover the varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Quality procedures</b>	<p>Quality procedures may:</p> <ul style="list-style-type: none"> <li>be contained in worksite quality system documentation, work instructions, safe work procedures, product specifications, equipment maintenance schedules, technical procedures and adopted or specifically prepared standards</li> </ul>
<b>Performance indicators</b>	<p>Performance indicators are to:</p> <ul style="list-style-type: none"> <li>account for issues of time, quantity, quality and cost factors and may include establishing time targets for own work, identifying reasonable criteria for evaluating own work outcomes, identifying measures to avoid wastage, identifying reasonable criteria to judge internal and/or external customer satisfaction and identifying processes to ensure a 'right first time' approach</li> </ul>
<b>Quality problems</b>	<p>Quality problems may include:</p> <ul style="list-style-type: none"> <li>misdiagnosed faults, jobs requiring rework, jobs which do not meet customer requirements and repairs which do not fix the problem within the allocated timeframe</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements include:</p> <ul style="list-style-type: none"> <li>state/territory legislation related to WHS and Australian Design Rules</li> </ul>
<b>Communication</b>	<p>Communications may be:</p> <ul style="list-style-type: none"> <li>verbal, written or by telephone or other means</li> </ul>
<b>Storage of documents</b>	<p>Documents of information are completed and may be stored:</p> <ul style="list-style-type: none"> <li>manually, electronically or by other means</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>vehicle manufacturer practices, enterprise operating procedures, supplier directories, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets (MSDS) and HAZCHEM, computer software manuals, bookkeeping procedures, taxation laws and regulations</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Quality
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## AURASA1001 Apply automotive workplace safety fundamentals

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to identify basic safety and emergency procedures that are used to maintain a safe automotive workplace.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work involves the theory and knowledge related to fundamental safety and emergency issues in an automotive workplace.</p> <p>Performance of work tasks that take in to consideration automotive workplace safety and emergency procedures may be applied in the application of the unit.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify basic workplace safety practices and procedures	1.1.Reasons for safe work practice in an automotive workshop are identified and determined 1.2.Responsibilities of staff in an automotive workshop are identified 1.3.Worksite <b><i>policies and procedures</i></b> to achieve a safe working environment are identified 1.4. <b><i>Workplace health and safety (WHS) requirements</i></b> , including personal safety needs, are identified and applied 1.5.Potential unsafe workplace situations are recognised 1.6.Fire and safety <b><i>hazards</i></b> and precautions are identified 1.7.Dangerous goods and substances, including storage and safe handling, are identified
2. Identify emergency procedures	2.1.Location of worksite <b><i>emergency procedures</i></b> is identified and referred to 2.2.Safety alarms are identified 2.3.Fire fighting equipment and appliances are identified 2.4.Qualified persons to be contacted in the event of accident or sickness of customers or staff are identified 2.5.Worksite evacuation procedures are identified and applied

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate basic verbal and written information relating to workplace safety procedures
- initiative and enterprise to participate in self-improvement activities
- literacy skills to:
  - understand basic workplace safety-related procedures
  - read and follow information on written instructions
  - identify and understand information relating to recognising and reporting situations
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities which implement and follow standard safety procedures
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person
  - identify, document and report numbers for emergency procedures
- self-management skills to:
  - locate and identify appropriate safety equipment
  - recognise limitations and seek timely advice
  - follow basic workplace documentation, such as operating and safety procedures
- teamwork skills to work with others and in a team by cooperating with team members
- technical skills to understand technical information relating to recognising and reporting unsafe situations
- technology skills to use workplace safety-related technology to assist with safe work practices

#### Required knowledge

- WHS procedures and requirements, equipment, material and personal safety requirements relating to automotive workplace safety
- location and identification of fire-fighting appliances
- dangerous goods and hazardous chemicals handling and storage practices
- worksite emergency and evacuation procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- communicate safety matters effectively with others in an automotive workplace
- identify WHS requirements in the automotive workplace such as personal protective equipment (PPE)
- identify hazardous situations, and report to the relevant persons
- identify safe handling and storage of dangerous and/or hazardous goods and substances
- follow worksite emergency and evacuation procedures.

##### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- a workplace or simulated workplace containing materials, tools and equipment used for automotive service and repair activities
- worksite or equivalent instructions on safe working practice
- hazardous chemicals and/or dangerous goods information

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• fire-fighting appliances and equipment.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Policies and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• job procedures and work instructions</li> <li>• safe working practices</li> <li>• enterprise operating procedures</li> <li>• hazard policies and procedures</li> <li>• emergency, fire and accident procedures</li> <li>• personal safety procedures</li> <li>• procedure for the use of personal protective clothing and equipment.</li> </ul>
<b><i>WHS requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• worksite documentation for WHS</li> <li>• industry or workplace codes of practice</li> <li>• emergency / incident signage or instructions.</li> </ul>
<b><i>Hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• sharp cutting tooling and instruments</li> <li>• electricity and water</li> <li>• toxic substances</li> <li>• damaged packing material or containers</li> <li>• broken or damaged equipment</li> <li>• flammable materials and fire hazards</li> <li>• lifting practices</li> <li>• spillages</li> <li>• waste and debris especially on floors, ladders, trolleys</li> <li>• glue guns/burns.</li> </ul>
<b><i>Emergency procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• sickness or accident reporting procedure</li> <li>• fire or workshop evacuation involving staff or customers</li> <li>• environmental incidents</li> <li>• incidents / accidents involving harmful or hazardous substances.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Common
<b>Unit sector</b>	Health and Safety

**Custom Content Section**

Not applicable.

## AURASA2002 Apply safe working practices in an automotive workplace

### Modification History

Release	Comment
Release 1	Replaces AURC270103A Apply safe working practices Performance Criteria updated to reflect the automotive workplace

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes to apply basic safety and emergency procedures in order to contribute to a safe workplace for staff, customers and others.</p> <p>The unit involves the safety factors related to the use of automotive workplace hand tools and hand-held power tools, fixed equipment, chemicals, as well as vehicles and their use.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to the safety and emergency procedures of automotive workplaces.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply basic safety procedures	<p>1.1. Worksite <i>policies and procedures</i> for safety are followed and maintained while performing work tasks</p> <p>1.2. Unsafe situations and <i>hazards</i> in the workplace are recognised and reported according to <i>workplace health and safety (WHS) requirements</i> and regulations</p> <p>1.3. Procedure and reporting guidelines for machinery and equipment breakdowns are identified</p> <p>1.4. Fire and safety hazards are identified and precautions are taken or reported according to workplace policy and procedures</p> <p>1.5. Storage and handling practices for dangerous goods and substances are identified and applied according to workplace policy, procedures and WHS requirements</p> <p>1.6. Workplace policy regarding manual handling practice is identified and followed</p> <p>1.7. Participation in WHS consultative arrangements established by company is exercised</p>
2. Apply emergency procedures	<p>2.1. Worksite policies and <i>emergency procedures</i> regarding illness or accidents are identified and applied</p> <p>2.2. Safety alarms are identified</p> <p>2.3. Fire fighting appliances and equipment are located and identified for emergency use</p> <p>2.4. Qualified persons are identified for contacting in the event of accident or sickness of customers or staff</p> <p>2.5. Accident and incident documentation practices are followed according to worksite accident and injury procedures</p> <p>2.6. Worksite evacuation procedures are identified</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate verbal and written information relating to reporting procedures and unsafe conditions
- initiative and enterprise to:
  - adapt to emerging situations in an automotive workplace
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand workplace safety-related procedures
  - read, interpret and follow information on written instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- numeracy skills to understand numbers and mathematical
- planning and organising skills to:
  - identify risk factors and take action to minimise risk
  - plan and organise activities which implement and follow standard procedures
- problem-solving skills to:
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - establish diagnostic processes which recommend improvements for WHS issues
- self-management skills to:
  - select and use appropriate safety equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - document and report numbers for emergency procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to:
  - work with others and in a team by assisting and cooperating with team members
  - work with diverse individuals and groups
- technical skills to:
  - collect, organise and understand technical information relating to recognising and reporting unsafe situations
- technology skills to use workplace safety-related technology to assist with safe work practices

#### Required knowledge

- implications for WHS of business operations and customer relations
- common automotive workplace safety terminology

**REQUIRED SKILLS AND KNOWLEDGE**

- WHS regulations, requirements, equipment and material and personal safety requirements
- safe manual handling theories and practices
- the location and application of fire fighting appliances in the workplace
- dangerous goods and hazardous chemicals handling processes
- workplace reporting procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- communicate effectively with others involved in or affected by the work
- identify and assess hazardous situations and rectify, or report to the relevant persons
- safely handle and store dangerous and hazardous goods and substances
- apply safe manual handling practices
- identify fire safety equipment and procedures applicable to emergency situations in an automotive workplace
- follow workplace safety, accident, incident and evacuation procedures.

**EVIDENCE GUIDE****Context of and specific resources for assessment**

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following should be made available:

- workplace location or simulated workplace
- worksite or equivalent instructions on safe working practice
- hazardous chemicals and dangerous goods information
- materials, tools and equipment relevant to an automotive workplace
- access to fire fighting appliances and equipment.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Policies and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• hazard policies and procedures</li> <li>• emergency, fire and accident procedures</li> <li>• personal safety procedures</li> <li>• procedures for the use of personal protective clothing and equipment</li> <li>• use of motor vehicles</li> <li>• resolution procedures</li> <li>• job procedures and work instructions</li> <li>• safe working practices</li> <li>• workplace operating procedures.</li> </ul>
<b><i>Workplace health and safety (WHS)</i></b> requirements:	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• sharp cutting tooling and instruments</li> <li>• electricity and water</li> <li>• toxic substances</li> <li>• damaged packing material or containers</li> <li>• broken or damaged equipment</li> <li>• flammable materials and fire hazards</li> <li>• lifting practices</li> <li>• spillages</li> <li>• waste and debris especially on floors, ladders, trolleys.</li> </ul>
<b><i>Emergency procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• sickness or accident reporting procedure</li> <li>• fire or workshop evacuation involving staff or customers</li> <li>• environmental incidents</li> <li>• incidents and accidents involving harmful or hazardous</li> </ul>

**RANGE STATEMENT**

	substances.
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**Unit Sector(s)**

<b>Competency field</b>	Common
<b>Unit sector</b>	Health and Safety

**Custom Content Section**

Not applicable.

## AURATA2001 Identify basic automotive faults using troubleshooting processes

### Modification History

Release	Comment
Release 1	Replaces AURC252103A Apply basic automotive troubleshooting processes Performance Criteria updated to reflect the automotive workplace

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to conduct troubleshooting processes to identify common automotive faults or problems based on evidence provided by customers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the identification of basic automotive faults of motorcycles, light vehicles, heavy commercial vehicles, agricultural equipment, mobile plant and other industrial environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify nature of the fault or problem	<ul style="list-style-type: none"><li>1.1. <i>Questioning techniques</i> are applied to determine nature of the customer enquiry</li><li>1.2. <i>Workplace health and safety (WHS) requirements</i> are observed and applied throughout the work</li><li>1.3. Information relating to the <i>fault</i> or problem is gathered, documented and confirmed with customer</li><li>1.4. <i>Troubleshooting process options</i> are researched and those most appropriate to the circumstances are selected</li><li>1.5. Appropriate tools and equipment are selected and prepared</li></ul>
2. Identify fault using troubleshooting processes	<ul style="list-style-type: none"><li>2.1. Automotive system or component relating to the fault or problem is identified</li><li>2.2. Troubleshooting processes are performed according to workplace procedures and without causing damage to components or systems to identify the likely cause of the fault or problem</li><li>2.3. Report is forwarded to persons for action according to workplace procedures</li></ul>
3. Clean up work area and finalise work processes	<ul style="list-style-type: none"><li>3.1. Final inspection is made to ensure work is to workplace expectations</li><li>3.2. Tools and equipment are checked and stored according to workplace expectations</li><li>3.3. Workplace documentation is completed according to workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to:
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during troubleshooting operations
- numeracy skills to assess tolerances and apply accurate measurements
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use tools and equipment relating to troubleshooting processes
- technology skills to use technology to collect and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- identification of basic automotive systems
- basic troubleshooting techniques and processes, including:
  - customer questioning skills to identify vehicle system in which fault lies
  - use of simple diagnostic charts
- procedures for reporting and documenting findings

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- identify a range of basic automotive faults
- conduct troubleshooting procedures according to workplace, manufacturer and component supplier requirements
- complete workplace documentation according to workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles and components with basic faults relevant to the qualification being sought
- equipment appropriate for the troubleshooting of basic automotive faults
- specifications and workplace instructions.

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Questioning techniques</i></b> may include:	<ul style="list-style-type: none"> <li>• open and closed questions</li> <li>• funnel, probing and leading questions.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Troubleshooting process options</i></b> may include:	<ul style="list-style-type: none"> <li>• analysis of available information to provide a list of tests to perform</li> <li>• use of diagnostic flowcharts</li> </ul>
<b><i>Fault</i></b> may include:	<ul style="list-style-type: none"> <li>• are basic in their scope</li> <li>• may include: <ul style="list-style-type: none"> <li>• lighting steering, suspension, braking, engine, drivetrain or fuel system faults</li> </ul> </li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Common
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURATA2002 Read and interpret engineering drawings

### Modification History

Release	Comment
Release 1	Replaces AURT225156A Read and interpret engineering drawings Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to read and interpret engineering drawings applicable to an automotive environment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit covers reading and interpretation of engineering drawings applicable to manufacturing or modification of components in an automotive environment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Work is carried out in accordance with award provisions.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine job requirements</li><li>1.2. Job specifications are read and interpreted</li><li>1.3. Product/system/component/item to be manufactured/modified is identified</li><li>1.4. Engineering drawings are selected relevant to information required</li><li>1.5. WHS requirements, including personal protection needs observed throughout the work</li><li>1.6. Correct equipment is identified and checked for safe use</li></ul>
2. Read and interpret engineering drawings	<ul style="list-style-type: none"><li>2.1. Symbols, codes, legends and diagrammatic representations are correctly identified</li><li>2.2. Material specifications/finish and dimensions/tolerances are identified</li><li>2.3. Product/system/component/item represented by the drawing is correctly identified</li></ul>
3. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>3.1. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</li><li>3.2. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures</li><li>3.3. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for viewing engineering drawings
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including the preparation and layout of the worksite and obtaining of equipment and drawing versions to avoid backtracking, workflow interruptions or time wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly interpret drawing specifications
- use pre-checking and inspection techniques to anticipate planning and scheduling problems and avoid wastage of time
- use workplace technology related to the reading and interpretation of engineering drawings, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- common automotive terminology, symbols, codes, legends and diagrammatic representations
- ISO standards and/or Australian Design Rules and equipment safety requirements
- design theory and its application to the workplace
- engineering drawing procedures and interpretive techniques
- site reporting procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- reading and interpreting a range of engineering drawings covering both component manufacturing and modification

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the reading and interpretation of engineering drawings
- equipment, hand and power tooling appropriate to the reading and interpretation of engineering drawings
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

**EVIDENCE GUIDE**

	<p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods of identification</b>	Methods are to include identification of symbols, codes, legends and diagrammatic representations
<b>Interpretation</b>	Interpretation of manufacture/modification specifications
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, workplace environment and safety and enterprise first aid
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with site safety, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Resources</b>	Resources may include manual and electronic viewing aids
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and may include site specific instructions, written instructions, plans or instructions related to job/task,

**RANGE STATEMENT**

	telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• schedules/plans/specifications, memos, material safety data sheets, diagrams or sketches</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURATA2003 Produce drawings from design concepts

### Modification History

Release	Comment
Release 1	Replaces AURT225191A Produce drawings from design concepts Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to produce drawings of objects from design concepts.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	Drawings are to include assembly type components which are hand drawn and may include computer-aided drawings.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify object to be drawn	1.1.Purpose (and operational characteristics) of object to be drawn are identified 1.2.Production materials and method are identified
2. Establish design requirements and limitations	2.1.Type of drawing to be completed is identified 2.2.Design concept requirements are established and documented identifying dimensions, angles, shapes and finished size 2.3.Drawing conventions and specifications to be noted are identified and selected
3. Quantify and draft initial drawing	3.1.Dimensions are plotted from prototype sketch and documented specifications 3.2.Dimensional points are connected to match drawing view 3.3.Production notes or special requirements are noted 3.4.Drawing conventions and specifications are noted
4. Complete drawing	4.1.Angles, shapes and dimensions are checked against specifications and concept prototype drawing 4.2.Adjustments are made to the drawing within scope of authority 4.3.Drawing is checked for compliance with workplace documentation requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information
- research and interpretive skills to locate, interpret and apply drawing production techniques and procedures
- English literacy and communication skills in relation to dealing with others involved in design work
- questioning and active listening skills, for example when obtaining information of technical quality working practices and drawing production procedures
- apply planning and organising skills to one's own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a client and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the production of drawings, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- common automotive terminology and vehicle safety requirements
- design and techniques for translating concepts into form
- design standards, including Australian Design Rules
- technical drawing procedures
- detailed site reporting procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting specifications and measurements in two and three dimensional form
- presenting information within production drawings
- completing essential post-activity housekeeping

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the production of drawings
- equipment, hand and power tooling appropriate to the production of drawings
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce

**EVIDENCE GUIDE**

	<p>the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, workplace environment and safety and enterprise first aid
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with site safety, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Resources</b>	Resources are to include drawing equipment/aids which are manual and electronically based
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• schedules/plans/specifications, memos, material safety data sheets, diagrams or sketches</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURATA3004 Provide technical guidance

### Modification History

Release	Comment
Release 1	Replaces AURC359554A Provide technical guidance Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to access and interpret technical information, assist staff with service/repair work, provide technical information to staff, and facilitate continuous education.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair - mechanical/technical.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assist staff with service/repair work	1.1. Technical guidance, appropriate to skill level and need, is provided to staff when determining the repair/service method 1.2. Staff with advanced technical competence are used as a point of reference 1.3. Technical assistance is provided to staff, to identify difficult faults 1.4. Assistance is provided to staff during work completion, to ensure technical requirements are met 1.5. Potential faults are recognised and precautionary steps are taken to prevent them 1.6. Problems arising from the repair procedure are addressed
2. Provide technical information to staff	2.1. Technical information is made available to staff 2.2. Current technical information is communicated to staff on a regular basis 2.3. Staff are shown how to access, interpret and apply technical information 2.4. A range of information sources is accessed through an established network
3. Facilitate continuous education of self and others	3.1. Sharing of information/knowledge is encouraged to continue expansion of personal and team knowledge 3.2. Training and education opportunities are identified, to meet technical and business needs, and to enhance technical skills of self and staff 3.3. Approval to attend courses is sought from management to ensure current and future technical requirements are met

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to providing technical guidance
- communicate ideas and information to customers and supervisors related to providing technical guidance
- plan and organise activities related to providing technical guidance
- work with others and in a team by seeing and conveying information related to the planning, sequencing and completion of the task
- use mathematical ideas and techniques to count and measure
- establish diagnostic processes that identify methods related to providing technical guidance
- use the workplace technology related to providing technical guidance

#### Required knowledge

Knowledge of:

- coaching principles
- sources of technical information
- technical training and education options for staff
- technical and technological developments to the sector of the industry in which one is employed

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- accessing and interpreting technical information, assisting staff with service/repair work, providing technical information to staff, and facilitating continuous education.

#### Context of and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job.
- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The following should be made available:
  - testing equipment and technical information.

#### Method of assessment

Practical assessments:

- effectively communicate with staff
- identify sources of technical information for a range of technical problems
- identify training and education opportunities for self and staff.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods include: <ul style="list-style-type: none"> <li>interpreting technical information and mentoring</li> </ul>
<b>Technical requirements for work completion</b>	Technical requirements for work completion may include: <ul style="list-style-type: none"> <li>manufacturer/component supplier specification</li> <li>organisational quality standards</li> <li>Australian Design Rules</li> <li>industry standards</li> <li>recommended repair procedures</li> <li>precaution notes</li> </ul>
<b>Areas of advanced technical competence (mechanical)</b>	Areas of advanced technical competence (mechanical) may include: <ul style="list-style-type: none"> <li>engine management systems</li> <li>automatic transmission control</li> <li>air conditioning, including climate control</li> <li>advanced braking systems, including heavy vehicle testing</li> <li>LPG service and repair</li> <li>steering alignment (front, rear and 4WS)</li> <li>advanced steering systems</li> <li>preparation of race cars (mechanical)</li> </ul>
<b>Areas of advanced technical competence (body)</b>	Areas of advanced technical competence (body) may include: <ul style="list-style-type: none"> <li>body electronics</li> <li>advanced welding</li> <li>advanced colour matching</li> <li>restoration</li> <li>panel body alignment</li> <li>air-conditioning systems (gas and degas)</li> <li>airbags</li> <li>preparation of race cars (body)</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>in-house literature (electronic or paper-based)</li> <li>experience of others in the organisation</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• other industry contacts (network)</li><li>• spare part representatives</li><li>• insurance assessors</li><li>• industry bodies/associations</li><li>• Australian Design Rules</li><li>• manufacturer/component supplier information</li><li>• technical information may include:<ul style="list-style-type: none"><li>• workshop manuals</li><li>• trade publications</li><li>• manufacturer/component supplier service bulletins and repair procedures</li><li>• manufacturer/component supplier specialised training programs</li></ul></li></ul>
<b>WHS requirements</b>	WHS requirements may include: <ul style="list-style-type: none"><li>• state/territory WHS legislation</li><li>• award provisions</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Common
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURATA3005 Estimate complex jobs

### Modification History

Release	Comment
Release 1	Replaces AURC365722A Estimate complex jobs Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to estimate the time requirements for complex jobs, source requirements, gather cost estimates from external service providers and document quotations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competency applies to retail, service and repair complex estimation work within the repair sector of the automotive industry.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Competence may be demonstrated in a workplace environment or simulated workplace.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Estimate time requirements for jobs	<p>1.1. Time estimates for job requirements are calculated based on warranty times, staff estimates, standard service/repair times, specifications, and subcontracted timeframes</p> <p>1.2. Service/repair times are estimated and compared to documented estimate to ensure repair job is viable</p> <p>1.3. Turn-around times for work completed by subcontractor are incorporated into total time estimates</p>
2. Source parts	<p>2.1. Viability of replacement compared to repair is ascertained to meet quality standards and legal requirements</p> <p>2.2. Part requirements are determined to ensure cost constraints are met</p> <p>2.3. Parts and consumables required for the job are ordered</p> <p>2.4. Parts are sourced externally when internal stock is not available to meet customer requirements</p>
3. Identify subcontract testing and/or service/repair work costs for incorporation into the total estimated cost	<p>3.1. Estimate is documented</p> <p>3.2. Service/repair requirements, procedures and costs are documented in a logical order</p> <p>3.3. Service/repair requirements are documented in detail</p> <p>3.4. Estimate is relevant to the identified service/repair requirements</p> <p>3.5. Potential variations are noted on the estimate</p>
4. Estimate total job costs	<p>4.1. External service providers are given a clear outline of the work and time requirements of the job</p> <p>4.2. Job cost estimate is documented and agreed with external service providers</p> <p>4.3. Parts and consumables are costed according to industry and/or enterprise pricing standards</p> <p>4.4. Supplementary estimate is prepared, to gain authorisation from owner for additional service/repairs</p> <p>4.5. Final estimate is documented</p> <p>4.6. Authorisation is gained from customer to commence work and/or undertake supplementary work</p>
5. Report estimations to customer	<p>5.1. Report of findings is completed in the enterprise-approved format</p> <p>5.2. Customer is advised of the estimation</p> <p>5.3. Job card is completed and delivered to appropriate persons</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- analytical skills required for the identification and analysis of technical information
- plain English literacy and communication skills in relation to dealing with customers and team members
- questioning and active listening skills for example when obtaining information from customers
- oral communication skills sufficient to convey information and concepts to customers
- as applied to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interacting effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques such as number and space and techniques, e.g. estimation and approximation, for practical purposes
- apply problem-solving strategies in purposeful ways, both in situations where the problem and the desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- combine the physical and sensory skills needed to operate equipment with understanding of scientific and technological principles needed to explore and adapt systems

#### Required knowledge

Knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- principles of estimating and job costing
- enterprise quality procedures
- work organisation and planning processes
- contract law
- sale-contracting principles
- written communication and report writing skills procedures relevant to application
- oral communication skills procedures relevant to application

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- estimating in accordance with workplace requirements
- estimation is carried out to manufacturer/component supplier requirements
- estimation of the work completed within workplace timeframes
- report presented to customer is in compliance with workplace requirements.

##### Context of and specific resources for assessment

- This unit will normally need to be assessed as a discrete entity. Performance may involve the application of a range of contributory competencies.
- Assessment of this unit must be completed on the job or in a simulated work environment which reflects a range of quality processes and procedures.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competence should be assessed within the context of the qualification being sought.
- The following should be made available:
  - a workplace or simulated workplace
  - enterprise stationery, telephone and forms/business documents
  - repair order, job cards and quotes/estimates
  - computer and software, calculator
  - hand tooling, workshop equipment
  - access to information

**EVIDENCE GUIDE****Method of assessment**

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.

Evidence of being able to:

- access, interpret and apply service information
- identify estimating and job costing procedures
- accurately estimating time required for a job involving sublet work and/or a mix of service/repair disciplines (e.g. mechanical, electrical and body)
- estimate on a wide variety of jobs, including non-routine jobs
- justify a repair job deemed to be 'viable' from a cost perspective
- justify a replacement/repair decision according to quality standards and legal requirements
- use service tooling and equipment
- observe safety procedures and requirements
- provide customer service
- prepare service reports
- communicate with customers orally and in writing
- maintain workplace documents.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Variables</b>	Variables may include: <ul style="list-style-type: none"> <li>• jobs involving subcontracted work</li> <li>• jobs involving a mix of vocations (e.g. mechanical, body and electrical)</li> <li>• non-routine jobs</li> </ul>
<b>Methods</b>	Methods include: <ul style="list-style-type: none"> <li>• written and verbal communication</li> <li>• sourcing of parts</li> <li>• estimating costs</li> <li>• documentation</li> </ul>
<b>Legislative requirements</b>	Legislative requirements may include: <ul style="list-style-type: none"> <li>• state/territory WHS legislation, manufacturer/component supplier specifications and safe operating procedures</li> <li>• environmental requirements, manual handling procedures and insurance requirements</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• manufacturer/component supplier specifications</li> <li>• enterprise operating procedures</li> <li>• customer requirements</li> <li>• industry/workplace codes of practice</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Common
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURBCA2001 Work in a retail bicycle environment

### Modification History

Release	Comment
Release 1	Replaces AURB254380B Operate in a retail bicycle environment Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to work effectively in a retail bicycle environment.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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### Application of the Unit

Application of the unit	This unit applies to individuals who work, or are seeking employment, in a bicycle retail environment.  It requires an understanding of the structure of the retail bicycle sector, including industry associations, potential career paths, industry practices and standards, bicycle terminology and developments in technology.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine potential career path and develop individual goals	1.1. Identify structure of retail bicycle sector, including roles and functions of industry/association bodies 1.2. Assess personal skills to identify strengths and weaknesses 1.3. Identify personal expectations and determine goals 1.4. Research potential career paths in the bicycle industry and match with personal goals 1.5. Identify training needs and incorporate into career planning
2. Meet employment requirements	2.1. Identify applicable workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs 2.2. Identify roles and responsibilities of employees in a bicycle workshop 2.3. Identify and comply with obligations to employers and others, including confidentiality requirements 2.4. Identify lines of communication and authority 2.5. Identify and comply with work practices, including legislation, regulations, codes of practice, team expectations and policies and procedures 2.6. Identify principles and methods of gaining and maintaining health and fitness through cycling
3. Develop and maintain currency in bicycle terminology and general knowledge	3.1. Identify key cycling magazines and other sources of information 3.2. Identify and use key bicycle terminologies 3.3. Research major cycling events and their potential impact on business 3.4. Identify bicycle types and their uses
4. Maintain equipment and work environment	4.1. Maintain personal workspace in a well organised and safe condition in accordance with team and workplace standards 4.2. Maintain workplace equipment in a clean and operational manner 4.3. Perform routine maintenance on workplace equipment 4.4. Identify and report faulty equipment to the appropriate person for repair action

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to carry out work role, including maintaining equipment and operating communications and information technology
- communication skills to the level required to communicate ideas and information to enable articulation of personal goals and career choices and information in the workplace, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to collect, organise and understand information related to the retail bicycle sector, including roles and responsibilities, WHS requirements and potential career paths
- numeracy skills to the level required to interpret work instructions and complete specified tasks using calculators and measuring devices
- problem-solving skills to the level required to develop solutions to unpredicted situations, clarify work instructions and resolve conflict
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle categories and bicycle terminology
- calendar of various Australian and international bicycle events
- structure of the retail bicycle sector
- authority and communication lines within the enterprise
- retail bicycle work ethic and team expectations, including personal attitudes needed
- equipment used by retail bicycle workshops
- workshop layout and organisation
- benefits of cycling in gaining and maintaining health and fitness
- goal setting methods and techniques
- communication principles and techniques
- conflict resolution principles and techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to bicycle retail operations
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to bicycle retail operations



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- correctly apply and use safety and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise risk of injury to self or others
  - achieve outcomes within time and quality standards
  - produce a career plan which covers:
    - personal goals and expectations
    - opportunities
    - timelines and personal development needs
  - work effectively with others
  - use terminology in communication with customers, suppliers and colleagues
  - ensure workplace equipment is in operational order.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - retail bicycle environment
  - materials relevant to operating in a retail bicycle environment
  - equipment and hand and power tooling appropriate to work operations in a retail bicycle environment
  - computer with internet connection

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• workplace documentation.</li></ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"><li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li><li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Workplace expectations

Workplace expectations include standards of:

- dress, personal presentation, preparedness and personal conduct, including respect for the rights and responsibilities of others
- quality and timeliness of work and the role of excellence and innovation
- knowledge of tooling and equipment and specific work area functions
- commitment, responsibility and preparedness for work, including working flexible hours to meet deadlines
- confidentiality and ethical work practices
- contribution to the overall effectiveness of the business

#### Information/documents

Information/documents may include:

- bicycle racing organisations for road bikes and off-road bikes
- other bicycle organisations and regional event organising organisations
- bicycle websites and periodical publications
- business policies and procedures relating to use of work areas, authorities and lines of communication
- business procedures relating to the use of tooling and equipment
- manufacturer/component supplier specifications and application procedures for materials, tooling and equipment
- Australian Design Rules

#### WHS requirements

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures

**RANGE STATEMENT**

<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Sales and Marketing
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## AURBCA2002 Select and adjust bicycle to fit rider

### Modification History

Release	Comment
Release 1	Replaces AURB254401A Select and adjust bicycle to fit rider Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement updated in unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to select and/or adjust a bicycle to best fit the physical abilities and cycling requirements of the rider.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who advise on the selection and adjustment of a bicycle and/or bicycle components to meet the needs of the rider.</p> <p>It applies to individuals working in a bicycle retail, service and repair environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information about the rider	1.1. Check and confirm customer requirements and cycling preferences 1.2. Assess physical attributes of customer by discussion, observation and measurements, if appropriate 1.3. Identify suitable bicycle types and configurations to match customer requirements 1.4. Discuss features and benefits of selected bicycles with customer
2. Adjust bicycle to fit the rider	2.1. Check that frame size matches rider's physical attributes 2.2. Check and adjust seat setting according to rider and manufacturer specifications 2.3. Check and adjust handlebars and stem settings according to rider and manufacturer specifications 2.4. Check and adjust clipless pedal settings to match rider's needs 2.5. Allow customer to test ride bicycle for riding comfort and efficiency 2.6. Make final adjustments as required

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to adjust bicycle components
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to bicycles, including common industry terminology, to prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements
- problem-solving skills to the level required to identify non-optimal bicycle fit and make required adjustments
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle terminology
- types and classifications of bicycles
- manufacturer and/or component supplier specifications
- biomechanical principles of cycling
- testing procedures and adjustment methods
- tools and equipment used in bicycle adjustment
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS), personal safety and environment, relevant to adjusting bicycles
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to adjusting bicycles

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with customer to determine requirements
- recommend bicycle types to suit customer requirements
- identify and assess variables that affect cycling comfort, stability, efficiency and aerodynamics
- complete adjustment of components to optimise cycling comfort, stability, efficiency and aerodynamics.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and components
  - equipment and tools appropriate to adjusting bicycles
  - technical specifications and standards
  - workplace documentation.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions

**EVIDENCE GUIDE**

	<p>(real or simulated) and require evidence of process.</p> <ul style="list-style-type: none"><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Bicycles</b>	<p>Bicycles may include:</p> <ul style="list-style-type: none"> <li>• those with and without gears, and with lever operated brakes</li> <li>• children and adult models of different heights</li> <li>• mountain, road, hybrid, BMX, track and trials models</li> </ul>
<b>Best fit considerations</b>	<p>Best fit considerations may include:</p> <ul style="list-style-type: none"> <li>• comfort</li> <li>• stability</li> <li>• efficiency</li> <li>• aerodynamics</li> <li>• fitness for purpose</li> </ul>
<b>Rider measurements</b>	<p>Rider measurements to be considered may include:</p> <ul style="list-style-type: none"> <li>• height</li> <li>• body shape</li> <li>• length of arms and legs</li> <li>• fitness</li> </ul>
<b>Bicycle adjustments</b>	<p>Bicycle adjustments for best fit may include:</p> <ul style="list-style-type: none"> <li>• frame size</li> <li>• crank length</li> <li>• distance from crank centre or bottom bracket to saddle</li> <li>• saddle angle</li> <li>• seat tube angle and saddle offset</li> <li>• distance from saddle to handlebar</li> <li>• relative height of saddle and handlebar</li> <li>• handlebar width, angle and lever reach</li> <li>• handlebar drop on road style handlebars</li> <li>• clipless pedal tension, and position of pedal and shoe</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• floor stand and workbench</li> </ul>
<b>Testing</b>	<p>Testing is to confirm:</p> <ul style="list-style-type: none"> <li>• safety, comfort and efficiency</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• stable handling, turning and steering</li> <li>• no failure in parts of the bicycle</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to adjusting bicycles</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Sales and Marketing
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## AURBSA3001 Conduct cycling proficiency training

### Modification History

Release	Comment
Release 1	Replaces AURB354601A Conduct cycling proficiency training Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to conduct individual and group instruction in safe cycling techniques.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who deliver cycling training in the community to promote safe and effective cycling in a road environment.</p> <p>It includes bicycle safety principles and bicycle handling skills, road safety skills and traffic awareness. The unit covers risk management processes, instructional methods and planning for trainers.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan an instructional session for teaching cycling proficiency	1.1. Identify safe cycling techniques 1.2. Determine client needs and assess current skill level and experience of client group 1.3. Identify cycling skills to be taught or developed 1.4. Select a suitable site for the instructional session based on client needs and session aims 1.5. Plan appropriate instructional activities and sequence of instruction to facilitate and enhance the learning process 1.6. Access and prepare learning resources, equipment and technological aids to supplement instruction 1.7. Prepare contingency plans to cope with inclement weather and other factors that may affect the session 1.8. Conduct a risk assessment of the instructional activities and location and implement a risk management plan
2. Prepare for instructional session	2.1. Select and prepare equipment and other resources suitable for the instructional activities 2.2. Fit and adjust equipment, where appropriate, to suit the needs of individual clients 2.3. Check all equipment for compliance with safety and road use regulations and good working order 2.4. Ensure first aid and repair kits are suitably stocked 2.5. Arrange protective and safety clothing and equipment for each client, where required 2.6. Brief the clients on the aim of the session, safety practices and appropriate behaviour
3. Conduct drills, activities and games to instruct cycling proficiency	3.1. Select instructional methods to match client readiness, the learning environment, the activity and equipment available 3.2. Allocate sufficient space and resources for the drill, activity and/or game 3.3. Constantly monitor potential hazards and risks during instruction, and implement appropriate risk management processes to avoid hazards 3.4. Deliver clear, relevant and concise information, explanations and demonstrations to ensure drills, activities and games are in accord with best practice principles of cycling activities 3.5. Communicate clearly in a style appropriate to the client 3.6. Use learning resources and materials and technological aids where appropriate to supplement presentations

ELEMENT	PERFORMANCE CRITERIA
	<p>3.7.Observe clients to ensure the drills, activities and games are conducted in the correct manner</p> <p>3.8.Observe client's skill execution and apply correctional techniques where required</p> <p>3.9.Provide constructive feedback and encouragement</p> <p>3.10. Perform demonstrations, where required, with a high level of technical correctness</p> <p>3.11. Maintain group control to ensure a safe and enjoyable learning experience</p>
4. Evaluate and review instruction methods	<p>4.1.Use questioning techniques to monitor client understanding during instruction</p> <p>4.2.Seek client feedback and provide opportunity for clients to comment and ask questions</p> <p>4.3.Implement modifications to the instructional method in response to monitoring and feedback</p> <p>4.4.Identify aspects needing further emphasis and attention for intervention in future sessions</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely control and manoeuvre a bicycle in road traffic, to adjust a bicycle to fit the rider and to operate audiovisual and technical equipment
- communication skills to the level required to ask relevant and appropriate questions, provide clear information and explanations, organise and give demonstrations, use listening skills, engage, motivate and connect with learners, and provide constructive feedback
- literacy skills to the level required to complete and maintain documentation, read and follow learning program/plan, and read and analyse learner information
- interpersonal skills to the level required to maintain appropriate relationships, establish trust, use appropriate body language, maintain humour, demonstrate tolerance, manage a group and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- observation skills to the level required to monitor learner acquisition of new skills, assess learner communication and interaction with others, identify learner concerns, and recognise learner readiness to take on new skills/tasks
- problem-solving skills to the level required to plan and organise activities, identify potential hazards, and modify activities to suit client group
- reflection skills to the level required to identify areas for improvement and maintain personal skill development

#### Required knowledge

Required knowledge includes:

- characteristics and needs of various client groups
- content and requirements of best practice cycling proficiency programs, including safe cycling techniques, traffic rules and road use regulations
- drills, activities and games to develop cycling proficiency
- sources and availability of relevant learning resources and learning materials
- training techniques which enhance learning and when to use them, such as:
  - instruction and explanation
  - questioning
  - practice
  - written information
  - group/pair/team activities
  - individual activities
  - coaching skills
  - demonstration

**REQUIRED SKILLS AND KNOWLEDGE**

- basic learning principles and different learning styles of children and adults
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS), road traffic rules and environment, relevant to cycling proficiency training
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to cycling proficiency training

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements, including evaluating whether conditions are suitable to commence the session
- determine the range and type of activities, drills and games required to develop cycling proficiency skills appropriate to the client/group
- conduct activities, drills and games to develop cycling proficiency skills in accordance with accepted industry best practice
- instruct cycling proficiency skills over a minimum of three (3) occasions to different clients
- observe clients and recognise when and how intervention should take place to improve performance
- analyse client's skills and provide constructive feedback
- modify instructional methods and activities in response to observations and feedback
- review own performance and evaluate program outcomes.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - mechanically sound bicycle and helmet for each client
  - personal protective equipment, if needed
  - non-traffic areas and quiet roads
  - learning resources and materials.

**EVIDENCE GUIDE**

<b>Method of assessment</b>	<ul style="list-style-type: none"><li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li><li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Safe cycling techniques

Safe cycling techniques include:

- bicycle safety principles and bicycle handling skills
- cycling skill and confidence
- control techniques in relation to riding on the road
- road safety skills and traffic awareness
- road use regulations and traffic rules
- advanced bike handling and traffic skills
- all-round observation, signalling and manoeuvring
- identifying and responding appropriately to hazards
- safe cycling manoeuvres on busy roads using complex intersections and road features
- adapting to weather conditions
- correct bike set-up, saddle and headset adjustments

#### Best practice principles of cycling proficiency

Best practice examples include:

- AustCycle teacher training program
- National Coaching Accreditation Scheme (NCAS) CycleSkill coach training program
- the codes of behaviour for trainers developed by industry peak bodies, including Cycling Australia, the Amy Gillett Foundation (AGF) and the Bicycle Federation of Australia (BFA)
- overseas programs, such as the National Standard for Cycle Training (UK), CAN-BIKE (Canada) and BikeEd (USA)

#### Client characteristics

Client characteristics may include:

- age, ethnicity, gender and disability
- physical fitness and body type
- cycling experience and skills level
- language, literacy and numeracy levels
- learning styles
- specific needs

#### Safe learning environment

Safe learning environment may include:

- mechanically sound bicycle and helmet
- personal protective equipment and clothing, if needed

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• non-traffic areas and quiet roads</li> <li>• gradual progression to busier roads</li> <li>• suitable maximum group size</li> </ul>
<b>Learning resources and materials</b>	<p>Learning resources and materials may include:</p> <ul style="list-style-type: none"> <li>• CDs and audiotapes</li> <li>• commercially available materials</li> <li>• learning resources produced in languages other than English</li> <li>• organisational learning resources</li> <li>• record/log books</li> <li>• references and texts</li> <li>• videos</li> <li>• handouts for learners</li> <li>• prepared activity sheets</li> <li>• prepared presentations and overheads</li> </ul>
<b>Instructional methods</b>	<p>Instructional methods may include:</p> <ul style="list-style-type: none"> <li>• warm up and introductory activities</li> <li>• practice and repetition of skills</li> <li>• demonstration of skills</li> <li>• break down of complex skills into component parts</li> <li>• identification and correction of faults</li> <li>• constructive feedback</li> <li>• questioning</li> <li>• demonstrate, explain, demonstrate, instruct, critique, test (D.E.D.I.C.T.)</li> <li>• explain, demonstrate, instruct, critique, test (E.D.I.C.T.)</li> <li>• introduce, demonstrate, explain, apply (I.D.E.A.)</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to cycling proficiency training</li> <li>• regulatory/legislative requirements pertaining to road and bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and</p>

<b>RANGE STATEMENT</b>	
	<p>organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• road traffic rules</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• road rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Health and Safety
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## AURBTA1001 Remove and tag bicycle components

### Modification History

Release	Comment
Release 1	Replaces AURB100064B Remove and tag bicycle components Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation Licensing statement updated in unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to identify and remove a range of bicycle components and tag by title and application.</p> <p>It requires the ability to understand specifications and use tools and equipment to remove and tag components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake component removal and tagging in a bicycle retail, service and repair environment.</p> <p>It is designed for application in a highly supervised context, such as VET in schools or other equivalent introduction or induction to industry environments.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove and tag bicycle components	<ul style="list-style-type: none"><li>1.1. Identify and confirm the nature and scope of work requirements</li><li>1.2. Observe workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and personal protection needs, throughout the work</li><li>1.3. Source equipment and information, such as workshop manuals, specifications and tooling</li><li>1.4. Analyse method options and select those most appropriate to the circumstances</li><li>1.5. Identify and remove/minimise risks associated with removal and tagging of bicycle components</li></ul>
2. Remove bicycle components	<ul style="list-style-type: none"><li>2.1. Identify bicycle components for removal</li><li>2.2. Implement methods for the safe removal and tagging of components in accordance with manufacturer/component supplier specifications</li><li>2.3. Select and use appropriate tools and equipment</li><li>2.4. Remove components without damage</li><li>2.5. Inspect removed components</li><li>2.6. Report on component condition in accordance with standard procedures</li></ul>
3. Tag bicycle components	<ul style="list-style-type: none"><li>3.1. Confirm tagging procedures</li><li>3.2. Identify resource requirements for tagging and prepare support equipment</li><li>3.3. Tag components without damage</li><li>3.4. Remove waste following standard procedures</li><li>3.5. Clean work area and store tools and equipment in accordance with standard procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to remove and tag bicycle components
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor and other workers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, to understand technical information and specifications and to tag components
- numeracy skills to the level required to identify and measure components
- problem-solving skills to the level required to anticipate and/or resolve problems and to avoid or minimise reworking and wastage
- team skills to the level required to work with effectively and cooperatively others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle terminology
- function of each component
- relationship of body components to each other
- removal procedures
- tagging procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to removing and tagging bicycle components
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to removing and tagging bicycle components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- identify and remove a range of components and tag by their title and application
- conduct removal and tagging without damage to components or tooling and equipment.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and components
  - equipment, hand and power tools appropriate to removing components
  - resources for tagging components
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- those with and without gears, and with lever operated brakes
- children and adult models of different sizes
- mountain, road, hybrid, BMX, track and trials models

#### Components

Bicycle components may include:

- wheels
- frames
- drivetrain
- steering
- suspension

#### Tagging methods

Tagging methods include:

- tagging by title and application

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling

#### Materials

Materials may include:

- tags and cleaning materials

#### Communication methods

Communication methods may include:

- verbal and visual instructions and fault reporting
- written instructions and plans
- telephones and pagers

#### Information/documents

Information/documents may include:

- enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders, industry/workplace codes of practice and material safety data sheets (MSDS)
- Australian Design Rules
- safe work procedures related to removing and tagging bicycle components
- organisation work specifications and requirements

**RANGE STATEMENT****WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care

**Environmental requirements**

Environmental requirements may include:

- waste management
- noise
- dust
- clean-up management

**Quality requirements**

Quality requirements may include:

- regulations, including Australian standards
- internal organisational quality policies and procedures
- enterprise operations and procedures

**Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURBTA1002 Adjust bicycles

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to adjust bicycle components and equipment.</p> <p>The unit involves identifying bicycle components and adjustment requirements, including the use of specialist tools to perform adjustments to bicycles to ensure safe and efficient operation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the adjustments of bicycle components in the bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i> relating to adjusting <i>bicycles</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are identified and applied</p> <p>1.3. Work areas are cleared to allow set-up and activities to take place according to workplace policies and procedures</p>
2. Inspect bicycle and determine work requirement	<p>2.1. Inspection is carried out to determine adjustment requirements according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Inspection findings are reported according to workplace procedures, including recommendations for necessary <i>adjustments</i></p>
3. Perform adjustments	<p>3.1. Adjustment options are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. <b>Appropriate tools</b>, techniques and materials are selected and prepared</p> <p>3.3. Adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>3.4. Post-adjustment testing is carried out to ensure safe and correct operation of the bicycle</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and bicycle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. <b>Documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- literacy skills:
  - reading skills to the level required to understand information related to work instruction, including terminology and workplace procedures
  - writing skills to complete workplace documentation
- numeracy skills to correctly interpret metric and imperial measurement systems
- planning and organising skills to:
  - identify risk factors to minimise them
  - follow workplace procedures
- problem-solving skills to:
  - identify workplace and technical problems
  - refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - identify tools and equipment
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as manufacturer specification, industry codes of practice and workplace procedures
- technical skills to:
  - apply technical information related to bicycle componentry and maintenance procedures
  - select and use appropriate tools and equipment
- technology skills to:
  - operate bicycle adjustment tools and equipment
  - use workplace technology to assist with workplace practices

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- bicycle terminology
- methods of sourcing information relevant to adjusting bicycles
- bicycle inspection procedures
- bicycle adjustment procedures, including the use of tools and equipment
- bicycle post-adjustment testing procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- perform a range of adjustment tasks on a minimum of three different bicycles with real or simulated adjustment requirements according to workplace, manufacturer and component supplier requirements
- complete workplace documentation
- present bicycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available:

- workplace location or simulated workplace
- bicycles and bicycle components
- equipment, hand and power tools and specialised repair tools and equipment appropriate to adjusting bicycles
- specifications and workplace instructions.

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	bicycle inspection and adjustment methods, processes and equipment.
<b>Bicycles</b> may include:	<ul style="list-style-type: none"> <li>• bikes with and without gears, and lever operated brakes</li> <li>• mountain, road, hybrid, BMX, track and time trial models and sizes.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Adjustments</b> may include those to:	<ul style="list-style-type: none"> <li>• brakes</li> <li>• suspension</li> <li>• chain tension</li> <li>• pedals and crank</li> <li>• wheel bearings</li> <li>• seat</li> <li>• handlebars and steering</li> <li>• gears</li> <li>• spokes.</li> </ul>
<b>Appropriate tools</b> may include	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• hand, power and air tools</li> <li>• specialised bicycle repair tools</li> <li>• floor stands, workbench.</li> </ul>

**RANGE STATEMENT**

*Documentation* may include:

- warranty information
- job card or work order
- workplace computerised or written customer records and invoice.

**Unit Sector(s)**

<b>Competency field</b>	Bicycle
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURBTA2003 Assemble bicycles

### Modification History

Release	Comment
Release 1	<p>Replaces AURB211304B Assemble bicycles</p> <p>Unit code updated to meet policy requirements.</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement updated in unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to assemble bicycles from a semi-assembled state.</p> <p>It requires the ability to understand specifications and use tools and equipment to fit and adjust bicycle components and accessories to Australian standards.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the selection, fitting and adjustment of bicycle components and accessories and final assembly of bicycles in a bicycle retail, service and repair environment.</p> <p>For assembly of new (box) bicycles, <i>AURBTA2004 Assemble box bicycles for retail sale</i>, should be selected.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Check and confirm customer requirements in accordance with workplace procedures</li><li>1.2. Research bicycle assembly requirements and access and check specifications</li><li>1.3. Check tooling and equipment prior to use, for availability and conformity with specifications and safe condition</li><li>1.4. Prepare work area and set up equipment and materials</li></ul>
2. Select/unpack bicycle components	<ul style="list-style-type: none"><li>2.1. Plan unpacking and assembly sequence</li><li>2.2. Remove packing material without causing damage to frame or other components or accessories</li><li>2.3. Determine condition of components by inspection and measurement and compare with specifications and customer use requirements</li><li>2.4. Identify damaged and/or missing frames and components and report/replace according to workshop procedures</li></ul>
3. Fit, test and adjust bicycle components	<ul style="list-style-type: none"><li>3.1. Perform fitting operation for bicycle components according to plan using personal safety equipment and precautions to protect others in the workplace</li><li>3.2. Select and use tooling and equipment in accordance with workplace health and safety (WHS) requirements</li><li>3.3. Check fitted bicycle components, complete adjustments, and prepare unit for delivery</li></ul>
4. Complete work and clean-up	<ul style="list-style-type: none"><li>4.1. Store portable tooling and equipment in approved designated areas</li><li>4.2. Update workplace records, customer file and warranty information as required by enterprise</li><li>4.3. Clean up work area and dispose of packing materials in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to assemble a bicycle, test the unit and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to prepare reports, and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine safe assembly and operation
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- manufacturer and/or component supplier specifications
- component function and application
- material used in accessories and fittings
- classification of accessory and fitting types
- assembly procedures
- testing procedures and adjustment methods
- tools and equipment used in bicycle assembly
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to assembling bicycles
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to assembling bicycles

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct removal, replacement, tensioning and adjustment of a range of components and common accessories in accordance with workplace and manufacturer/component supplier requirements
- complete removal and adjustment of components and accessories within workplace timeframes
- present bicycle for delivery to customer in compliance with workplace requirements and Australian standards.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and components
  - equipment, hand and power tools appropriate to assembling bicycles
  - technical specifications and standards
  - workplace documentation.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant

**EVIDENCE GUIDE**

	<p>contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- those with and without gears, and with lever operated brakes
- children and adult models of different heights
- mountain, road, hybrid, BMX, track and trials models

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and air tooling

#### Assembly methods

Assembly methods may include:

- fitting and manual adjustments of components and accessories
- measuring, screwing, bonding, clamping, filing, riveting and drilling
- greasing and lubrication
- torque settings

#### Materials

Materials may include:

- tapes
- fitting consumables
- cleaning materials

#### Assembly tasks

Assembly tasks may include:

- basic adjustments and setup of a cycle
- frame alignment and preparation
- headset fitting and adjustment
- brake fitting and adjustment, cable and general hydraulic
- gear fitting and adjustment, including dérailleurs and hub gears, shifters, chain, cassette, chain set and bottom bracket
- wheel fitting and adjustment
- peddles
- saddles

#### Testing

Testing is to confirm:

- safety and efficiency
- stable handling, turning and steering

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• no failure in parts of the bicycle</li> <li>• no loosening or misalignment of seat, handlebars, controls or reflectors</li> <li>• no loss of components or accessories</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to assembling bicycles</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Bicycle
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURBTA2004 Assemble box bicycles for retail sale

### Modification History

Release	Comment
Release 1	Replaces AURB211305A Assemble box bicycle for retail sale Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to assemble and test a new bicycle for retail sale.</p> <p>It requires the ability to identify bicycle components, interpret manufacturer instructions and specifications, assemble a bicycle and test the assembled bicycle for safe and efficient operation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake assembling and testing of new bicycles in a bicycle retail, service and repair environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for the assembly of a new bicycle	1.1. Identify and confirm nature and scope of work requirements 1.2. Identify workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and personal protection needs, and observe throughout the work 1.3. Source procedures and information, such as workshop manuals and manufacturer specifications 1.4. Check tooling and equipment for availability, conformity with specifications and safe condition 1.5. Prepare work area and set up equipment and materials
2. Assemble new bicycle	2.1. Unpack bicycle components and confirm contents are complete 2.2. Identify damaged and/or missing frames and components and report/replace according to workshop procedures 2.3. Identify methods for bicycle model assembly requirements in accordance with manufacturer/component supplier specifications 2.4. Install components without damage 2.5. Set up moving parts in accordance with manufacturer/component supplier specifications 2.6. Select and use appropriate tools, materials and equipment 2.7. Check fitted bicycle components and make necessary adjustments 2.8. Complete records in accordance with workplace procedures
3. Tag assembled bicycle	3.1. Identify workplace tagging procedures 3.2. Identify and prepare resource requirements and support equipment for tagging 3.3. Tag assembled bicycle without damage 3.4. Clean up work area and dispose of packing materials in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to assemble a new bicycle, test the unit and make adjustments and tag the completed bicycle
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine safe assembly and operation
- problem solving skills to the level required to identify technical and procedural problems to avoid planning, scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle classifications and terminology
- manufacturer and/or component supplier specifications
- component function and application
- installation and assembly procedures
- testing procedures and adjustment methods
- tagging procedures
- tools and equipment used in bicycle assembly
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to assembling a bicycle for retail sale
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to assembling a bicycle for retail sale

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct assembly and tagging without damage to components or tooling and equipment
- assemble a range of bicycles in compliance with Australian standards and workplace requirements.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models
  - equipment, hand and power tools appropriate to assembling bicycles
  - technical specifications and standards
  - tagging equipment.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

**EVIDENCE GUIDE**

	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- those with and without gears, and with lever operated brakes
- children and adult models of different heights
- mountain, road, hybrid, BMX, track and trials models

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and air tooling

#### Assembly methods

Assembly methods are to include:

- fitting and manual adjustments of components and accessories
- measuring, screwing, bonding, clamping, filing, riveting and drilling
- greasing and lubrication
- torque settings

#### Materials

Materials may include:

- tags
- tapes
- fitting consumables
- cleaning materials

#### Assembly tasks

Assembly tasks are to include:

- basic adjustments and set-up of a cycle
- headset adjustment
- brake adjustment, including the capabilities to shorten outer cables and to reset the brakes to operating condition, applicable to cable and general hydraulic
- gear adjustment, including dérailleurs and hub gears, shifters and chain
- wheel fitting and adjustment
- pedals
- saddles

#### Testing

Testing is to confirm:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• safety and efficiency</li> <li>• stable handling, turning and steering</li> <li>• no failure in parts of the bicycle</li> <li>• no loosening or misalignment of seat, handlebars, controls or reflectors</li> <li>• no loss of components or accessories</li> </ul>
<b>Tagging</b>	<p>Tagging methods may include:</p> <ul style="list-style-type: none"> <li>• tagging by model, size and application</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• hardcopy and electronic media</li> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to assembling bicycles</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policy and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical
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## AURBTA3005 Restore bicycles

### Modification History

Release	Comment
Release 1	Replaces AURB311401A Restore a bicycle Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to restore a used or vintage bicycle to fully functioning or original condition, where possible.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the restoration of a bicycle in a bicycle retail, service and repair environment.</p> <p>It requires the ability to research technical data and use tools and equipment to repair, recondition and replace components to restore a bicycle as close as practicable to its original condition.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and assessing second hand parts for serviceability and suitability.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify requirements	1.1. Check and confirm customer requirements in accordance with workplace procedures 1.2. Research original bicycle components and specifications and access information 1.3. Source suppliers and determine availability of original bicycle parts 1.4. Source second hand parts and assess for suitability and serviceability 1.5. Check tooling and equipment for availability and conformity with specifications and safe condition
2. Inspect bicycle	2.1. Prepare work area and set up equipment and materials 2.2. Inspect bicycle systems and components for faults and worn or damaged components using visual, aural and tactile inspections and measurements 2.3. Compare conditions found with original bicycle specifications and customer requirements 2.4. Identify restoration, replacement and repair options for bicycle components, including outsourcing 2.5. Document and cost restoration items and obtain customer approval in accordance with workplace procedures
3. Restore bicycle	3.1. Select and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.2. Dismantle bicycle, inspect and tag components 3.3. Perform restoration operations on components using personal safety equipment and precautions to protect others in the workplace 3.4. Outsource work as required, such as replating and repainting 3.5. Reassemble bicycle and operate restored bicycle through its full range, noting test results, including non-conformity 3.6. Check restored bicycle components, complete adjustments and prepare unit for delivery
4. Complete work and clean up	4.1. Clean and store portable tooling and equipment in approved designated areas 4.2. Complete workplace records, customer file and warranty information as required by enterprise 4.3. Clean up work area and dispose of waste in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to restore a bicycle, test the unit and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to conduct research and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine safe assembly and operation
- problem-solving skills to the level required to assess bicycle condition and determine repair, replacement and restoration options
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle terminology
- application of mechanical principles
- classification of bicycle systems and identification of system components
- purpose and requirements of bicycle systems and their compatibility with each other
- manufacturer and/or component supplier specifications
- classification of accessories and fittings
- assembly procedures
- testing procedures and adjustment methods
- selection, checking and use of tooling and equipment
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to restoring bicycles
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to restoring bicycles

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Assessors must be satisfied that the candidate can competently and consistently:
- observe safety procedures and requirements
  - communicate effectively with others involved in or affected by the work
  - select methods and techniques appropriate to the circumstances
  - dismantle, inspect and tag bicycle components
  - restore, repair and rebuild a range of bicycle components
  - replace components with appropriate new or serviceable second hand parts
  - reassemble, test and adjust bicycle without damage to components or tooling and equipment
  - present bicycle for delivery to customer in compliance with workplace requirements and Australian standards.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a bicycle for restoration
  - equipment, hand and power tools appropriate to restoring bicycles
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and

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	<p>Knowledge.</p> <ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- those with and without gears, and with lever operated brakes
- children and adult models of different heights
- mountain, road, hybrid, touring, BMX, track and trials models

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench, jigs and air tooling

#### Restoration methods

Restoration methods may include:

- dismantling, inspection and tagging of components
- repair and rebuilding of components, including frame, wheels and rims, gears, brakes, drivetrain, suspension and steering systems
- reassembly of bicycle
- fitting and manual adjustments of repaired and replacement components and accessories
- measuring, screwing, bonding, clamping, filing, riveting and drilling
- replating and repainting
- greasing and lubrication
- torque settings

#### Testing

Testing of the restored bicycle is to confirm:

- safe operation
- stable handling, turning and steering
- no failure in parts of the bicycle
- no loosening or misalignment of seat, handlebars, controls or reflectors
- no loss of components or accessories

#### Information/documents

Information/documents may include:

- hardcopy and electronic media
- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material

**RANGE STATEMENT**

	<p>safety data sheets (MSDS), diagrams or sketches</p> <ul style="list-style-type: none"> <li>• safe work procedures related to restoring bicycles</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• internal organisational quality policies and procedures</li><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policy and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURBTA3006 Identify and select components for custom bicycles

### Modification History

Release	Comment
Release 1	<p>Replaces AURB332301A Specify and select components for a custom bicycle</p> <p>Unit code updated to meet policy requirements.</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to calculate measurements and select bicycle components to meet the client's cycling requirements.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who advise on the selection of stock bicycle frames and bicycle components to build a custom bicycle.</p> <p>It applies to individuals working in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information about the client	1.1. Check and confirm customer requirements, including price range and intended use of the unit 1.2. Assess physical attributes and riding style of customer by discussion, observation and measurements 1.3. Discuss features and benefits of various frame materials and designs with customer 1.4. Use sizing cycle, or other methods, to analyse optimum bicycle measurements and set-up
2. Select bicycle frame or specify measurements for custom frame	2.1. Identify suitable frame types and configurations to match customer requirements 2.2. Research bicycle design principles and check available custom builders, stock item suppliers and specifications 2.3. If stock frame preferred, check frame measurements and select frame to match rider's size and intended use 2.4. If custom frame preferred, calculate measurements and decide on frame material and build method
3. Select wheels or specify wheel building requirements	3.1. Determine wheel size to suit frame measurements 3.2. Identify rims, spokes and hub types to suit intended use of unit 3.3. Discuss features and benefits of various wheel designs and components with customer 3.4. Select stock wheels and components or calculate specifications and design for custom wheels
4. Select bicycle components	4.1. Research catalogues and suppliers of bicycle components and discuss options with customer 4.2. Select components to suit bicycle design and intended use within price range
5. Confirm details for custom bicycle	5.1. Specify custom paint requirements, if required 5.2. Prepare parts list and determine availability 5.3. Calculate and document costs and obtain customer approval
6. Prepare bicycle for delivery	6.1. Check the assembled custom bicycle for correct operation and specifications 6.2. Make adjustments, if required, and prepare unit for delivery to the customer

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use bicycle fitting equipment, perform tests and to fit and adjust bicycle components
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to research information related to bicycle design and components and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements, calculate ratios and interpret specifications
- problem-solving skills to the level required to apply bicycle design principles and measurements to specify and select suitable components for a custom bicycle
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle classification and terminology
- application of mechanical principles
- biomechanical principles of cycling
- design requirements of bicycle frames and wheels
- classification and identification of bicycle frames, wheels and components
- purpose and relationships of bicycle frames, wheels, suspension, drivetrain and steering systems
- material used in bicycle frames, wheels and components
- manufacturer and/or component supplier specifications
- testing procedures and adjustment methods
- tools and equipment used in bicycle adjustment
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS), personal safety and environment, relevant to designing bicycles
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to designing bicycles



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with customer to determine requirements
- identify and assess variables that affect cycling comfort, stability, efficiency and aerodynamics
- apply mechanical principles and measurements to select or design a bicycle frame to meet client and intended use requirements
- select components to complement the bicycle design and to meet client and intended use requirements
- check the custom bicycle operation, make adjustments and prepare for delivery to the customer.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle frames and components
  - fitting equipment (e.g. sizing bicycle, video equipment and measuring equipment)
  - equipment and tools appropriate to adjusting bicycles
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant

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	<p>contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- mountain, road, hybrid, touring, BMX, track and trials models

#### Bicycle measurements

Bicycle measurements may include:

- fork rake or offset
- fork trail
- head tube length and angle (steering axis)
- wheelbase
- front centre
- bottom bracket drop
- seat tube length and angle
- top tube length
- setback
- stem length
- saddle height

#### Client physical attributes

Client physical attributes to be considered may include:

- height
- body shape and weight distribution
- length of arms and legs
- fitness, injuries and style of cycling

#### Bicycle frames

Bicycle frames may include:

- steel, lugged, brazed or welded
- titanium
- composite material
- lugged, brazed or welded
- carbon fibre
- stock items or custom built

#### Bicycle components

Bicycle components may include:

- wheels, rims, spokes and hubs
- handlebars and headset
- forks and suspension
- saddle and seat post

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• cassette, chain rim, chain and crank</li> <li>• pedals</li> <li>• front and rear derailleur</li> <li>• bottom bracket</li> <li>• brake, brake lever and brake shift</li> <li>• racks, lights and other accessories</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• hardcopy and electronic media</li> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to designing bicycles</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policy and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURBTA3007 Provide mechanical support to cycling events

### Modification History

Release	Comment
Release 1	<p>Replaces AURB354501A Provide mechanical support to cycling events</p> <p>Unit code updated to meet policy requirements.</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to work effectively as a support mechanic in professional or amateur competitions or organised recreational cycling events.</p> <p>It includes meeting event employment requirements, managing daily work activities and contributing to the effective working of the support team.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who work or volunteer as a bicycle mechanic in organised cycling events.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research types of events and employment opportunities	1.1. Identify structure of the competitive/recreational bicycle sector, including roles and functions of sport, community and industry associations/bodies 1.2. Research major cycling events and employment opportunities 1.3. Assess own skills and identify training needs 1.4. Determine career goals and employment opportunities
2. Meet employment requirements	2.1. Identify roles and responsibilities of mechanics in a bicycle event/competition 2.2. Complete application process 2.3. Identify and comply with obligations to employers and others, including confidentiality requirements 2.4. Identify lines of communication and authority 2.5. Identify and comply with event regulations, team expectations and policies and procedures 2.6. Identify principles and methods of gaining and maintaining personal health and fitness levels appropriate to job role, including rest requirements 2.7. Develop and maintain own technical skills through work experience and practice 2.8. Research developments in bicycle technology and mechanical techniques
3. Prepare for event	3.1. Confirm team arrangements for travel/arrival and ensure all documentation is complete 3.2. Select tool and equipment requirements and check for availability and good condition 3.3. Select and prepare spare parts, wheels and bicycles 3.4. Pack tools and equipment safely for transportation 3.5. Select and prepare personal items to allow for effective rest and hygiene
4. Provide mechanical support	4.1. Identify and follow applicable workplace health and safety (WHS) requirements and event regulations 4.2. Confirm own work role and responsibilities 4.3. Establish lines of communication 4.4. Assemble temporary work station and associated fittings, if required, in accordance with team requirements and event regulations 4.5. Prepare support vehicle, if required, in accordance with team requirements and event regulations

ELEMENT	PERFORMANCE CRITERIA
	<p>4.6. Perform mechanical repairs and adjustments within designated timeframes and to team standards</p> <p>4.7. Use mechanical knowledge to provide functional repairs when optimal solutions are not possible</p> <p>4.8. Obtain client approval before commencing work, where appropriate</p> <p>4.9. Seek assistance from appropriate persons when difficulties arise</p> <p>4.10. Maintain personal workspace in a well organised and safe condition in accordance with team and event standards</p> <p>4.11. Maintain tools and equipment in a clean and operational manner</p> <p>4.12. Manage rest requirements to maintain work standards and output</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to carry out work role, including setting up workstation, using and maintaining tools and equipment and performing repairs and adjustments on bicycles
- communication skills to the level required to communicate effectively regarding work requirements with supervisor, other team members and clients, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to collect, organise and understand information related to organised cycling events, including roles and responsibilities, event regulations and requirements, and potential career paths
- numeracy skills to the level required to interpret technical information and complete specified tasks using calculations and measuring devices
- problem-solving skills to the level required to develop solutions to unpredicted situations, clarify work instructions and resolve conflict
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- cycling event categories
- roles and structure of Australian and international cycling regulatory bodies
- calendar of various Australian and international bicycle events
- roles within support teams and their relationship with one another
- authority and communication lines within support teams
- repair and maintenance techniques for bicycles and components in a race or event environment
- tooling and equipment used by mechanical support teams
- temporary workshop layout and organisation
- principles and methods of gaining and maintaining health and fitness, including nutritional requirements
- communication principles and techniques
- conflict resolution principles and techniques
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to bicycle repairs
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to bicycle repairs



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- perform mechanical support activities in a cycling event for a minimum duration of one (1) day on at least two (2) occasions, including:
  - working to required team/event standards
  - identifying and applying team requirements, controlling body and event category rules and regulations
  - correctly applying safety procedures and using personal protective equipment
  - working effectively with others
  - modifying activities to cater for variations in workplace context and environment
- maintain and apply knowledge of current bicycle technology.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - information relevant to cycling bodies/organisations and events
  - equipment and tooling appropriate to work operations in a cycling event environment
  - computer with internet connection
  - workplace documentation.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

	<p>performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Cycling events

Cycling events may include:

- road, track, cross or mountain races/competitions
- community and charity recreational events
- local, national or international events

#### Personal attributes

Personal attributes may include:

- knowledge of tooling and equipment and specific work area functions
- commitment, responsibility and preparedness for work, including working flexible hours to meet deadlines
- confidentiality and ethical work practices
- contribution to the overall effectiveness of the business

#### Setting up a temporary work location

Setting up a temporary work location may involve:

- installation of floor matting
- set-up of tables and benches
- installation of temporary lighting
- erection of temporary fencing
- erection of bicycle storage facilities
- positioning of tooling and equipment, including portable bicycle stands
- positioning of spare parts, components and specialist tools
- installation of computing and communication equipment
- installation of fire fighting and environmental protection equipment (e.g. cleaning agents and disposal containers)
- erection of promotional signage and security barriers

#### Tools and equipment

Tools and equipment may include:

- portable bicycle stand
- general and specialist hand tools
- spare parts
- lubricants
- hydraulic fluid
- tapes
- various nuts, bolts, screws and fasteners

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• pump</li> <li>• compressor</li> <li>• cleaning products and rags</li> <li>• ear protection, eye protection and disposable gloves</li> <li>• first aid kit</li> </ul>
<b>Mechanical repairs</b>	<p>Mechanical repairs may include:</p> <ul style="list-style-type: none"> <li>• racing bicycle preparation</li> <li>• track support</li> <li>• wheel changes and repairs</li> <li>• tyre and tube replacement</li> <li>• repairs to brake, drivetrain, and steering and suspension systems and components</li> <li>• replacement of damaged parts</li> <li>• installation of additional parts, including cycle computers, bar ends and rear racks</li> <li>• bicycle wash</li> <li>• bicycle/body fit adjustments</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• bicycle racing organisations for road bikes and off-road bikes</li> <li>• other bicycle organisations and regional event organising bodies</li> <li>• bicycle websites and periodical publications</li> <li>• racing rules and regulations</li> <li>• event policies and procedures relating to use of work areas, authorities and lines of communication</li> <li>• work procedures relating to the use of tools and equipment</li> <li>• manufacturer/component supplier specifications and application procedures for materials, tools and equipment</li> <li>• Australian Design Rules</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>

**RANGE STATEMENT**

<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURBTB2001 Service and repair bicycle mechanical braking systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURB212171A Service and repair bicycle mechanical braking systems</p> <p>Unit code updated to meet policy requirements.</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to inspect, plan and safely service, repair and test bicycle mechanical braking systems and complete documents.</p> <p>It requires the ability to interpret specifications, assess the condition of mechanical braking systems, and to select and use tooling and equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake service and repair of components of mechanical braking systems in a bicycle servicing and repair environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm customer requirements and intended use of the unit in accordance with workplace procedures 1.2. Identify and check bicycle mechanical braking system service and repair requirements and specifications 1.3. Check tooling and equipment for availability, conformity with specifications and safe condition 1.4. Prepare work area and set up equipment and materials
2. Inspect bicycle mechanical braking system	2.1. Inspect bicycle mechanical braking system for faults and worn or damaged components, using visual, aural and tactile inspections, and measurements 2.2. Compare conditions found with bicycle mechanical braking system specifications and customer requirements 2.3. Identify service and repair options for mechanical braking system 2.4. Document and cost service and repair items for customer approval in accordance with workplace procedures 2.5. Obtain customer approval for work to be undertaken
3. Prepare for service and repair of bicycle mechanical braking system	3.1. Plan service and repair sequence and determine availability of tooling and equipment 3.2. Ensure service and repair sequence plan includes post-service testing and checking process 3.3. Prepare list of parts and materials and determine availability 3.4. Identify need for additional persons to assist in repair process and make arrangements 3.5. Select and check tooling and equipment to meet job requirements
4. Service and repair bicycle mechanical braking system	4.1. Perform service and repair operations for bicycle mechanical braking system according to plan 4.2. Use personal safety equipment and take precautions to protect others in the workplace 4.3. Use and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 4.4. Check customer requirements and bicycle braking system specifications in accordance with workplace procedures 4.5. Clear worksite of waste and spills at regular intervals in accordance with workplace procedures
5. Test bicycle mechanical braking system	5.1. Operate bicycle braking system through its full range, noting test results, including non-conformity 5.2. Check bicycle mechanical braking system, complete

ELEMENT	PERFORMANCE CRITERIA
	<p>adjustments and prepare unit for delivery</p> <p>5.3.Clean and store portable tooling and equipment in approved designated areas</p> <p>5.4.Complete workplace records, customer file and warranty information as required by enterprise</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing, repairing and testing of bicycle mechanical braking systems
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports, complete records and interpret technical information and specifications
- numeracy skills to the level required to correctly count and measure to determine mechanical brake system condition and operation
- problem-solving skills to the level required to plan and organise activities and establish diagnostic processes which identify methods of servicing, repairing and testing bicycle mechanical braking systems
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- application of mechanical principles
- classification of bicycle mechanical braking systems and identification of system components
- purpose and requirements of bicycle mechanical braking systems and their relationship to suspension, wheels, drivetrain, frame and steering system
- material used in bicycle mechanical braking systems
- mechanical braking system service, repair and test procedures and techniques
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing and repairing bicycle mechanical braking systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing and repairing bicycle mechanical braking systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- inspect a range of bicycle mechanical brake systems and components and accurately identify required service and repair options
- service and repair a range of bicycle mechanical brake systems and components to manufacturer/ component supplier specifications
- test bicycle mechanical brake systems to manufacturer/component supplier specifications.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - suitably equipped workplace or simulated workplace
  - area for safe testing of braking systems
  - a range of bicycle mechanical brake systems and components
  - material relevant to servicing and repairing bicycle mechanical braking systems
  - equipment and hand and power tooling appropriate to servicing and repairing bicycle mechanical braking systems
  - specifications and work instructions.

**EVIDENCE GUIDE**

<b>Method of assessment</b>	<ul style="list-style-type: none"><li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li><li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Mechanical braking system</b>	<p>Mechanical braking system may include:</p> <ul style="list-style-type: none"> <li>• cantilever, disc, internal coaster and drum brakes</li> <li>• composite material brake pads</li> <li>• mechanical linkages</li> <li>• manual adjustment and integrated brake and gear levers</li> </ul>
<b>Servicing and repair methods</b>	<p>Servicing and repair methods are to include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing</li> <li>• servicing and manual adjustments of mechanical braking system components</li> <li>• communicating with customers</li> <li>• documenting and reporting on service</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specific service and repair and general workshop equipment and tooling</li> <li>• floor stands, workbench and air tooling</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting</li> <li>• site-specific instructions, written instructions and plans or instructions related to job/task</li> <li>• telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to bicycle mechanical braking systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Brakes
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## AURBTB2002 Service bicycle hydraulic braking systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURB212370B Service bicycle hydraulic braking systems</p> <p>Unit code updated to meet policy requirements.</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform service operations to bicycle hydraulic braking systems.</p> <p>It requires the ability to understand specifications and use tools and equipment to service and test bicycle hydraulic brake components and systems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, servicing, and testing of bicycle hydraulic braking systems in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information on bicycle hydraulic braking system	1.1. Check customer requirements and intended use of the unit being serviced by discussion with customer 1.2. Research bicycle hydraulic braking system service requirements and check specifications 1.3. Determine condition of system by visual, aural and tactile inspections and measurements 1.4. Compare conditions found with bicycle hydraulic braking system specifications and customer use requirements
2. Prepare for service of bicycle hydraulic braking system	2.1. Plan service sequence, including post-service testing and checking process, and determine availability of tooling and equipment 2.2. Prepare material list and determine availability 2.3. Select tooling and equipment to meet job requirements, and check to ensure they are in good working order 2.4. Set up equipment and prepare work area
3. Service and test bicycle hydraulic braking system	3.1. Perform service operations for bicycle hydraulic braking system according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle braking system specifications following service procedures 3.5. Operate bicycle braking system through its full range, noting test results, including non-conformity 3.6. Check bicycle hydraulic braking system, complete adjustments and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Clean up work area and dispose of waste in accordance with workplace procedures 4.3. Update workplace records, customer file and warranty information as required by enterprise 4.4. Prepare accounts and invoices as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to service bicycle hydraulic braking system, test the unit and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine system condition and operation
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- manufacturer and/or component supplier specifications
- application of hydraulic principles
- classification of bicycle hydraulic braking systems, identification of system components and their relationship to suspension, wheels, drivetrain, frame and steering
- material used in bicycle hydraulic braking systems
- use of tooling and equipment
- bicycle servicing processes and techniques
- bicycle brake testing techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to servicing bicycle hydraulic braking systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing bicycle hydraulic braking systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service a range of bicycle hydraulic braking systems to manufacturer/component supplier requirements
- test a range of bicycle hydraulic braking systems to manufacturer/component supplier requirements
- complete servicing records.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and hydraulic brake components
  - equipment, hand and power tools appropriate to servicing bicycle hydraulic brakes
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

**EVIDENCE GUIDE**

	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- children and adult models of different heights
- mountain, road, hybrid, BMX, track and trials models

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and air tooling

#### Servicing operations

Servicing operations are to include:

- master cylinder
- hydraulic lines and mechanical linkages
- cantilever disc and drum brakes
- composite material brake pads
- hydraulic linkages
- manual adjustment
- integrated brake and gear levers

#### Materials

Materials may include:

- braking system parts
- consumables
- cleaning materials

#### Testing

Testing is to confirm:

- safety and efficiency
- stable handling, turning and steering
- no failure in the hydraulic braking system

#### Information/documents

Information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- safe work procedures related to bicycle hydraulic braking systems
- regulatory/legislative requirements pertaining to bicycle safety
- engineer's design specifications and instructions

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and</b>	<p>Organisational policies and procedures may include:</p>

**RANGE STATEMENT****procedures**

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)****Unit sector**

Bicycle

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Brakes

## AURBTB3003 Repair bicycle hydraulic braking systems

### Modification History

Release	Comment
Release 1	Replaces AURB312366B Repair bicycle hydraulic braking systems Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform repair operations to bicycle hydraulic braking systems.</p> <p>It requires the ability to understand specifications and use tools and equipment to repair and test bicycle hydraulic brake components and systems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, repair and testing of bicycle hydraulic braking systems in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect bicycle hydraulic braking system	1.1. Inspect bicycle hydraulic braking system for faults and worn or damaged components 1.2. Determine repairs by visual, aural and tactile inspections and measurements 1.3. Compare conditions found with bicycle hydraulic braking system specifications and customer use requirements 1.4. Identify repair options for hydraulic braking system following workplace procedures 1.5. Document and cost repairs and obtain customer approval for work to be undertaken
2. Prepare for repair of bicycle hydraulic braking system	2.1. Plan repair sequence, including post-repair testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare parts list and determine availability of replacement components 2.4. Identify additional persons to assist in repair process and make arrangements 2.5. Select tooling and equipment to meet job requirements and check to ensure they are in good working order
3. Repair and test bicycle hydraulic braking system	3.1. Perform repair of bicycle hydraulic braking system according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle braking system specifications following repair procedures 3.5. Operate repaired bicycle braking system through its full range, noting test results, including non-conformity 3.6. Check repaired bicycle hydraulic braking system, complete adjustments and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Clean up work area and dispose of waste in accordance with workplace procedures 4.3. Update workplace records, customer file and warranty information as required by enterprise 4.4. Prepare accounts and invoices as required by enterprise



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

##### Required skills include:

- technical skills to the level required to safely use tooling and equipment to repair bicycle hydraulic braking system, test the unit and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine system condition and operation
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

##### Required knowledge includes:

- bicycle anatomy and terminology
- manufacturer and/or component supplier specifications
- application of hydraulic principles
- classification of bicycle hydraulic braking systems, identification of system components and their relationship to suspension, wheels, drivetrain, frame and steering
- material and fluids used in bicycle hydraulic braking systems
- use of tooling and equipment
- brake repair processes and techniques
- bicycle brake testing techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to repairing bicycle hydraulic braking systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to repairing bicycle hydraulic braking systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- repair a range of bicycle hydraulic braking systems to manufacturer/component supplier specifications
- test bicycle hydraulic braking systems to manufacturer/component supplier specifications
- complete repair documentation.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and hydraulic brake components
  - equipment, hand and power tools appropriate to repairing bicycle hydraulic brakes
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

**EVIDENCE GUIDE**

	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- children and adult models of different heights
- mountain, road, hybrid, BMX, track and trials models

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and air tooling

#### Servicing operations

Servicing operations are to include:

- master cylinder
- hydraulic lines and mechanical linkages
- cantilever disc and drum brakes
- composite material brake pads
- hydraulic linkages
- manual adjustment
- integrated brake and gear levers

#### Materials

Materials may include:

- braking system parts
- consumables
- cleaning materials

#### Testing

Testing is to confirm:

- safety and efficiency
- stable handling, turning and steering
- no failure in the hydraulic braking system

#### Information/documents

Information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- safe work procedures related to bicycle hydraulic braking systems
- regulatory/legislative requirements pertaining to bicycle safety
- engineer's design specifications and instructions

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and</b>	<p>Organisational policies and procedures may include:</p>

**RANGE STATEMENT****procedures**

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)****Unit sector**

Bicycle

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Brakes

## AURBTD2001 Service bicycle steering systems

### Modification History

Release	Comment
Release 1	Replaces AURB215672A Service bicycle steering systems Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service and test bicycle steering systems.</p> <p>It requires the ability to understand specifications and use tools and equipment to service and test bicycle headsets, handlebars and stems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, servicing and testing of bicycle steering systems and components in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information on bicycle steering system	1.1. Check customer requirements and confirm intended use of the unit being serviced 1.2. Inspect bicycle headset, handlebar and stem for faults and worn or damaged components 1.3. Research bicycle steering system service requirements and check specifications 1.4. Determine condition of system by visual, aural and tactile inspections and measurements 1.5. Compare conditions found with bicycle steering system specifications and customer use requirements
2. Prepare for service of bicycle steering system	2.1. Plan service sequence, including post-service testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare parts list and determine availability of replacement components 2.4. Select tooling and equipment to meet job requirements and check to ensure they are in good working order
3. Service and test bicycle steering system	3.1. Perform service of bicycle steering system according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle steering system specifications following service procedures 3.5. Operate bicycle steering system through its full range, noting test results, including non-conformity 3.6. Check serviced bicycle steering system, complete adjustments, and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Clean up work area and dispose of waste in accordance with workplace procedures 4.3. Update workplace records, customer file and warranty information as required by enterprise 4.4. Prepare accounts and invoices as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to service bicycle steering system, test the unit and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine system condition and operation
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning, scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- manufacturer and/or component supplier specifications
- application of mechanical principles
- classification of bicycle steering systems and identification of system components
- purpose and requirements of a bicycle steering system and relationship to suspension, wheels, drivetrain, frame and braking system
- material used in bicycle steering systems
- servicing procedures and techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing bicycle steering systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing bicycle steering systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service bicycle headsets, handlebars and stems to manufacturer/component supplier specifications
- test bicycle headsets, handlebars and stems.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle steering unit configurations
  - equipment, hand tools appropriate to servicing bicycle headsets, handlebars and stems
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.

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	<ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Bicycles</b>	Bicycles may include: <ul style="list-style-type: none"> <li>• children and adult models of different heights</li> <li>• mountain, road, hybrid, BMX, track and trials models</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• floor stands, workbench and steering jigs</li> </ul>
<b>Bicycle steering system servicing</b>	Bicycle steering system servicing is to include: <ul style="list-style-type: none"> <li>• headset</li> <li>• handlebars</li> <li>• stems</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• steering system parts</li> <li>• consumables</li> <li>• cleaning materials</li> </ul>
<b>Testing</b>	Testing is to confirm: <ul style="list-style-type: none"> <li>• safety and efficiency</li> <li>• stable handling, turning and steering</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to bicycle steering systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURBTD2002 Service bicycle suspension systems

### Modification History

Release	Comment
Release 1	Replaces AURB216672A Service bicycle suspension systems Unit code updated to meet policy requirements. Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service and test bicycle suspension systems.</p> <p>It requires the ability to understand specifications and use tools and equipment to service and test bicycle suspension components and systems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, servicing and testing of a range of bicycle suspension unit configurations in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information on bicycle suspension system	1.1. Check customer requirements and confirm intended use of the unit being serviced 1.2. Inspect bicycle suspension system for faults and worn or damaged components 1.3. Research bicycle suspension system service requirements and check specifications 1.4. Determine condition of system by visual, aural and tactile inspections and measurements 1.5. Compare conditions found with bicycle suspension system specifications and customer use requirements
2. Prepare for service of bicycle suspension system	2.1. Plan service sequence, including post-service testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare materials list and determine availability 2.4. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 2.5. Prepare work area for servicing activity
3. Service and test bicycle suspension system	3.1. Perform service of bicycle suspension system according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle suspension system specifications following service procedures 3.5. Operate bicycle suspension system through its full range, noting test results, including non-conformity 3.6. Check serviced bicycle suspension system, complete adjustments, and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Clean up work area and dispose of waste in accordance with workplace procedures 4.3. Update workplace records, customer file and warranty information as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to service bicycle suspension system, test the unit and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine system condition and operation
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning, scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- application of mechanical and hydraulic principles
- classification of bicycle suspension systems and identification of system components
- purpose and requirements of bicycle suspension systems and their relationship to wheels, drivetrain and frame
- material used in bicycle suspension systems
- suspension system service procedures and techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environmental, relevant to servicing bicycle suspension systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing bicycle suspension systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service a range of bicycle suspension systems to manufacturer/component supplier specifications
- test bicycle suspension systems to manufacturer/ component supplier specifications.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and suspension systems and components
  - equipment, hand and power tools appropriate to servicing bicycle suspension systems
  - technical specifications and standards
  - workplace documentation.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

**EVIDENCE GUIDE**

	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Bicycles</b>	Bicycles may include: <ul style="list-style-type: none"> <li>• children and adult models of different heights</li> <li>• mountain, road, hybrid, BMX, track and trials models</li> </ul>
<b>Suspension systems</b>	Suspension systems may include: <ul style="list-style-type: none"> <li>• elastomer and spring units</li> <li>• mechanical, air and hydraulic systems</li> <li>• hydraulic fluids</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• hand-held power tooling</li> <li>• floor stands and workbench</li> </ul>
<b>Service items</b>	Service items may include: <ul style="list-style-type: none"> <li>• frame and suspension geometry</li> <li>• disassembly and cleaning</li> <li>• suspension bearings</li> <li>• lubricants</li> <li>• suspension compression ratios</li> <li>• elastomer and spring system lubricating oils</li> <li>• seals and fasteners</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• suspension system parts</li> <li>• consumables</li> <li>• cleaning materials</li> </ul>
<b>Testing</b>	Testing is to confirm: <ul style="list-style-type: none"> <li>• safety and efficiency</li> <li>• stable handling, turning and steering</li> <li>• no failure in the suspension system</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material</li> </ul>

**RANGE STATEMENT**

	<p>safety data sheets (MSDS), diagrams or sketches</p> <ul style="list-style-type: none"> <li>• safe work procedures related to bicycle suspension systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> </ul>

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	<ul style="list-style-type: none"><li>• internal organisational quality policies and procedures</li><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURBTD3003 Repair and overhaul bicycle steering systems

### Modification History

Release	Comment
Release 1	Replaces AURB315646A Repair/overhaul bicycle steering systems Unit code updated to meet policy requirements. Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to inspect, plan, and safely repair, overhaul and test bicycle steering systems.</p> <p>It requires the ability to understand specifications and use specialist tools and equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, repair/overhaul and testing of bicycle headsets, handlebars and stems in a bicycle retail, service and repair environment. It includes installation, replacement and repair or overhaul of these components and cutting and fitting of forks on all bicycle types.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect bicycle steering system	1.1. Inspect bicycle steering system for faults and worn or damaged components 1.2. Determine repairs by visual, aural and tactile inspections and measurements 1.3. Compare conditions found with bicycle steering system specifications and customer use requirements 1.4. Identify repair and replacement options for bicycle steering system following workplace procedures 1.5. Document and cost repairs and replacements and obtain customer approval for work to be undertaken
2. Prepare for repair of bicycle steering system	2.1. Plan repair and overhaul sequence, including post-repair testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare parts list and determine availability of replacement components 2.4. Identify additional persons to assist in repair process and make arrangements 2.5. Select tooling and equipment to meet job requirements and check to ensure they are in good working order
3. Repair, overhaul and test bicycle headsets, handlebars and stems	3.1. Perform repair/overhaul of bicycle steering system according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle steering system specifications following repair/overhaul procedures 3.5. Operate repaired bicycle steering system through full range, noting test results, including non-conformity 3.6. Check repaired bicycle steering system, complete adjustments and alignments, and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Update workplace records, customer file and warranty information as required by enterprise 4.3. Clean up work area and dispose of waste in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to repair/overhaul a range of bicycle headsets, handlebars, stems and forks, perform tests and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to use diagnostic processes, and identify technical and procedural problems to avoid planning, scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- application of mechanical principles relevant to bicycle steering systems
- classification of bicycle steering systems and identification of system components and their operation
- purpose and requirements of bicycle steering systems and their relationship to suspension, wheels, drivetrain, frame and braking system
- material used in bicycle steering systems
- fork rake and offset
- suitability of fork types to various applications
- steering system repair/overhaul procedures and techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environmental, relevant to repair/overhaul of bicycle steering systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to repair/overhaul of bicycle steering systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- repair and overhaul a range of bicycle steering system configurations to manufacturer/component supplier specifications
- fit new forks to a frame to manufacturer/component supplier specifications
- test bicycle steering systems to manufacturer/ component supplier specifications.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle steering configurations
  - equipment, hand and power tools appropriate to repairing steering systems
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and

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	<p>Knowledge.</p> <ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Steering system</b>	Overhaul of bicycle steering system is to include: <ul style="list-style-type: none"> <li>• suspension forks</li> <li>• composite material</li> <li>• cartridge, needle, gage and loose headset bearings</li> <li>• threaded and threadless headset types</li> <li>• drop, flat, clip on, time trial and BMX handlebars</li> <li>• all terrain, road and BMX head stems</li> </ul>
<b>Repair/overhaul methods</b>	Repair/overhaul methods are to include: <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• repair and manual adjustments of steering system components</li> <li>• fitting of forks</li> <li>• installation of thread inserts</li> <li>• communicating with customers</li> <li>• documenting and reporting repairs</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• tap threads</li> <li>• floor stands, workbench and steering jigs</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• a range of bicycle steering configurations</li> <li>• spare parts</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to repair and overhaul of bicycle steering systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURBTD3004 Repair and overhaul bicycle suspension systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURB316646A Repair/overhaul bicycle suspension systems</p> <p>Unit code updated to meet policy requirements.</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to inspect, plan, and safely repair, overhaul and test bicycle suspension systems.</p> <p>It requires the ability to understand specifications and use specialist tools and equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, repair/overhaul and testing of mechanical, air and hydraulic bicycle suspension systems in a bicycle retail, service and repair environment. It includes installation, replacement and repair or overhaul of components on all bicycle types.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect bicycle suspension system	1.1. Inspect bicycle suspension system for faults and worn or damaged components 1.2. Determine repairs by visual, aural and tactile inspections and measurements 1.3. Compare conditions found with bicycle suspension system specifications and customer use requirements 1.4. Identify repair and replacement options for bicycle suspension system following workplace procedures 1.5. Document and cost repairs and replacements and obtain customer approval for work to be undertaken
2. Prepare for repair of bicycle suspension system	2.1. Plan repair and overhaul sequence, including post-repair testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare parts list and determine availability of replacement components 2.4. Identify additional persons to assist in repair process and make arrangements 2.5. Select tooling and equipment to meet job requirements and check to ensure they are in good working order
3. Repair, overhaul and test bicycle suspension system	3.1. Perform repair/overhaul of bicycle suspension system according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle suspension system specifications following repair/overhaul procedures 3.5. Operate repaired bicycle suspension system through full range, noting test results, including non-conformity 3.6. Check repaired bicycle suspension system, complete adjustments and alignments, and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Update workplace records, customer file and warranty information as required by enterprise 4.3. Clean up work area and dispose of waste in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to repair/overhaul a range of bicycle suspension systems, perform tests and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to use diagnostic processes, and identify technical and procedural problems to avoid planning, scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- classification of bicycle suspension systems and identification of system components and their functions
- purpose and requirements of bicycle suspension systems and their relationship to wheels, drivetrain and frame
- application of mechanical and hydraulic principles as they relate to bicycle suspension systems
- materials used in bicycle suspension systems
- repair/overhaul procedures for suspension systems
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environmental, relevant to repair/overhaul of bicycle suspension systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to repair/overhaul of bicycle suspension systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- repair and overhaul a range of bicycle suspension systems to manufacturer/component supplier specifications
- test bicycle suspension systems to manufacturer/ component supplier specifications.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle suspension systems
  - equipment, hand and power tools appropriate to repairing suspension systems
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to

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	<p>ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Suspension systems</b>	<p>Suspension systems may include:</p> <ul style="list-style-type: none"> <li>• elastomer and spring units</li> <li>• mechanical, air and hydraulic systems</li> <li>• hydraulic fluids</li> </ul>
<b>Service items</b>	<p>Service items may include:</p> <ul style="list-style-type: none"> <li>• frame and suspension geometry</li> <li>• disassembly and cleaning</li> <li>• suspension bearings</li> <li>• lubricants</li> <li>• suspension compression ratios</li> <li>• elastomer and spring system lubricating oils</li> <li>• seals and fasteners</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• hand-held power tooling</li> <li>• floor stands and workbench</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• a range of bicycle suspension systems</li> <li>• spare parts</li> <li>• cleaning materials</li> </ul>
<b>Testing</b>	<p>Testing is to confirm:</p> <ul style="list-style-type: none"> <li>• safety and efficiency</li> <li>• stable handling, turning and steering</li> <li>• no failure in the suspension system</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to repair and overhaul of bicycle suspension systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>

**RANGE STATEMENT****Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)****Unit sector**

Bicycle

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Steering and Suspension

## AURBTJ2001 Remove, repair and fit bicycle tyres

### Modification History

Release	Comment
Release 1	Replaces AURB218168B Remove, repair and fit bicycle tyres Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to remove, repair and fit bicycle tyres and complete documents.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the removal, repair and fitting of bicycle tyres in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information on bicycle tyre	1.1. Check customer requirements in accordance with workplace procedures 1.2. Confirm intended use of tyre by discussions with customer 1.3. Research bicycle tyre fitting requirements and access and check specifications 1.4. Check tooling and equipment prior to use for conformity with specifications and safe condition 1.5. Determine condition of tyre by visual and tactile inspections and pressure measurement 1.6. Compare conditions found with bicycle tyre specifications and customer use requirements 1.7. Cost repairs and additional work and gain customer approval
2. Prepare for removal, repair and fitting of a bicycle tyre and tube	2.1. Plan removal, repair and fitting sequence and determine availability of tooling and equipment 2.2. Ensure plan includes post-fitting testing and checking process 2.3. Select tooling and equipment to meet job requirements and set up work area
3. Remove fit, and test bicycle tyre and tube	3.1. Perform removal, repair and fitting operation for bicycle tyre and tube according to plan 3.2. Select, use and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.3. Perform fitting and repair operations using personal safety equipment and precautions to protect others in the workplace 3.4. Check customer requirements and bicycle tyre and tube specifications following fitting procedures 3.5. Check fitted bicycle tyre and tube, complete pressure adjustments and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Update workplace records, customer file and warranty information as required by enterprise 4.3. Prepare accounts and invoices as required by enterprise 4.4. Clean up work area and dispose of packing materials in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to remove, repair and fit bicycle tyres
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to prepare reports and interpret technical information and specifications
- numeracy skills to the level required to count and measure accurately
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- manufacturer and/or component supplier specifications
- classification of tyres and tubes and fitting types
- purpose and requirements of bicycle tyres and tubes and their relationship to wheels, steering systems, suspension, drivetrain, frame and braking system
- application of mechanical and pneumatic principles
- material used in bicycle tyres and tubes
- removal, repair and fitting procedures and techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to removal, repair and fitting of bicycle tyres
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to removal, repair and fitting of bicycle tyres

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- remove, inspect, repair and fit a range of bicycle tyres to different rim configurations to manufacturer/component supplier specifications.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle tyres and rim configurations
  - equipment, hand and power tools appropriate to removal, repair and fitting of bicycle tyres
  - technical specifications and standards
  - workplace documentation.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- those with and without gears, and with lever operated brakes
- children and adult models of different heights
- mountain, road, hybrid, BMX, track and trials models

#### Tyres

Tyres may include:

- road
- track
- heavy duty
- tubed
- tubeless
- solid tyres

#### Rims

Rims may include:

- steel
- aluminium
- deep dish
- aero
- composite material
- disc type rims

#### Tooling and equipment

Tooling and equipment may include:

- specific tyre removing, repairing, fitting and general workshop equipment tooling
- specific testing equipment and pneumatic inflation equipment
- floor stands, workbench and air tooling

#### Materials

Materials may include:

- spare parts
- adhesives and cleaning agents
- plastic, rubber and cloth rim tapes
- cleaning materials

#### Information/documents

Information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material

**RANGE STATEMENT**

	<p>safety data sheets (MSDS), diagrams or sketches</p> <ul style="list-style-type: none"> <li>• safe work procedures related to removal, repair and fitting of bicycle tyres</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• regulations, including Australian standards</li><li>• internal organisational quality policies and procedures</li><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Wheels and Tyres
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## AURBTJ2002 Service bicycle wheels and hubs

### Modification History

Release	Comment
Release 1	Replaces AURB218267A Service bicycle wheels and hubs Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to inspect, and safely remove/refit bicycle wheels and service wheel hubs.</p> <p>It requires the ability to understand specifications and use specialist tools and equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the removal and fitting of bicycle wheels and servicing of wheel hubs in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect bicycle wheel and hub	1.1. Check customer requirements and intended use of the unit in accordance with workplace procedures 1.2. Research bicycle wheel and hub service requirements and check specifications 1.3. Inspect bicycle wheel and hub for faults and worn or damaged components by visual, aural and tactile inspections and measurements 1.4. Compare conditions found with bicycle wheel and hub specifications and customer use requirements 1.5. Identify service options for bicycle wheel and hub in accordance with workplace procedures
2. Prepare for service of bicycle wheel and hub	2.1. Plan service sequence, including post-service testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Select tooling, equipment and materials to meet job requirements and check for good working order 2.4. Set up work area
3. Remove bicycle wheel, service hub and refit wheel	3.1. Remove bicycle wheel and perform service operations according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and perform bicycle wheel service prior to refitting 3.5. Operate serviced bicycle wheel and hub through full range, noting test results, including non-conformity 3.6. Check serviced bicycle wheel and hub, complete adjustments and alignments, and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Update workplace records, customer file and warranty information as required by enterprise 4.3. Clean up work area and dispose of waste in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to remove and refit a range of bicycle wheels and service hubs, perform tests and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning, scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- manufacturer and/or component supplier specifications
- classification of bicycle wheels and hubs and identification of system components
- purpose and requirements of a bicycle wheel as a suspension, steering and braking component
- purpose and requirements of a bicycle wheel hub and their relationship to suspension, wheels, drivetrain, frame and braking
- materials and processes used in torque measurement and adjustment of wheels
- wheel removal and refitting procedures and techniques
- material used in bicycle wheel hubs
- wheel hub servicing procedures and techniques
- use of tooling and equipment
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environmental, relevant to removal, refitting and servicing of bicycle wheels and hubs
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to removal, refitting and

**REQUIRED SKILLS AND KNOWLEDGE**

servicing of bicycle wheels and hubs

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- remove and refit a range of bicycle wheel configurations to manufacturer/component supplier specifications
- identify wear or faults in bicycle wheel hubs
- service bicycle wheel hubs to manufacturer/component supplier specifications
- test bicycle wheels and hubs to manufacturer/component supplier specifications
- present bicycle for delivery to customer in compliance with workplace requirements.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle frames, wheels and hubs
  - equipment, hand and power tools appropriate to removing and refitting wheels and servicing hubs
  - technical specifications and standards
  - workplace documentation.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- those with and without gears, and with lever operated brakes
- children and adult models of different heights
- mountain, road, hybrid, BMX, track and trials models

#### Wheels and associated components

Wheels and associated components may include:

- spoked, disk and tri-spoked wheels
- conventional, clincher, tubular, aero, deep dished and composite material wheel rims
- quick release, Allen head and nut wheel fasteners
- vertical and horizontal frame lugs

#### Bicycle wheel hubs

Bicycle wheel hubs may include:

- disk, drum and coaster, and internal foot brake hubs
- loose ball, cage and roller bearings
- hub lubricants

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and wheel jigs

#### Materials

Materials may include:

- a range of bicycle wheels and hubs
- parts suitable for use in wheels and hubs
- lubricants
- cleaning materials

#### Testing

Testing is to confirm:

- safety and efficiency
- stable handling, turning and steering
- no failure in parts of the bicycle

#### Information/documents

Information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material

<b>RANGE STATEMENT</b>	
	<p>safety data sheets (MSDS), diagrams or sketches</p> <ul style="list-style-type: none"> <li>• safe work procedures related to removing, fitting and servicing bicycle wheels and hubs</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• regulations, including Australian standards</li><li>• internal organisational quality policies and procedures</li><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Bicycle
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Wheels and Tyres
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## AURBTJ3003 Design and build bicycle wheels

### Modification History

Release	Comment
Release 1	Replaces AURB318207B Design and build bicycle wheels Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to design and safely build bicycle wheels with different hub, spoke and rim configurations.</p> <p>It requires the ability to understand specifications and use tools and equipment to inspect, repair and test bicycle wheels.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the design and building of bicycle wheels in a bicycle retail, service and repair environment.</p> <p>The unit requires building of a range of bicycle wheels with different hub, spoke and rim configurations. Build methods include assembly and manual adjustment of wheel components.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information on bicycle wheel	1.1. Check customer requirements and confirm intended use of the unit being designed following workplace procedures 1.2. Research bicycle wheel design requirements and check specifications 1.3. Confirm bicycle wheel design and specifications with customer 1.4. Check tooling and equipment prior to use for conformity with specifications and safe condition
2. Prepare for building of bicycle wheel	2.1. Plan build sequence, including post-build checking process 2.2. Determine availability of tooling and equipment to meet job requirements 2.3. Prepare material list and determine availability 2.4. Prepare tooling and equipment and check to ensure they are in good working order 2.5. Prepare work area and materials
3. Build bicycle wheel	3.1. Perform build operations for bicycle wheel according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and use tools and equipment safely 3.4. Check customer requirements and bicycle wheel specifications following build procedures
4. Test bicycle wheel and complete work	4.1. Operate built bicycle wheel through full range, noting test results, including non-conformity 4.2. Check built bicycle wheel, complete adjustments and prepare unit for delivery 4.3. Store portable tooling and equipment in approved designated areas 4.4. Clean work area and dispose of waste following workplace procedures 4.5. Update workplace records, customer file and warranty information as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to design and build a range of bicycle wheels, perform tests and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to prepare reports and interpret technical information and specifications related to various types of bicycle wheels, their components and spoke patterns
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to establish diagnostic processes which identify potential faults in wheel design, and identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- application of mechanical principles
- classification of bicycle wheels and identification of components
- purpose and requirements of bicycle wheels and their relationship to suspension, drivetrain, frame and steering systems
- material used in bicycle wheels
- design requirements of bicycle wheels
- use of tooling and equipment
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS), personal safety and environment, relevant to designing and building bicycle wheels
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to designing and building bicycle wheels



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- design and build a range of bicycle wheels to specification
- complete workplace records.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle wheels and components
  - equipment, hand and power tools appropriate to building wheels
  - technical specifications and standards
  - workplace documentation.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions

**EVIDENCE GUIDE**

	<p>(real or simulated) and require evidence of process.</p> <ul style="list-style-type: none"><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Wheels and components

Bicycle wheels and components may include:

- steel, aluminium, deep dish, aero, composite material and disc type rims
- high flange, low flange and integrated brake hubs
- metal and composite hub material
- steel, aluminium and composite spoke material
- straight gauge, double butted and bladed spokes
- spoke nipples
- spoke lacing patterns
- types of adhesives and surface coatings

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and wheel jigs

#### Materials

Materials may include:

- a range of wheel components, including rims, spokes and hubs and cleaning materials

#### Wheel design and build considerations

Wheel design and build considerations may include:

- the principles and materials used in wheel building
- hubs, spoke and rim selection
- lacing a 32 hole 3 cross spoke pattern
- other spoke patterns and variations
- disc and non-disc brake specific patterns
- factory wheel set designs and technology
- tying and soldering spokes
- calculating spoke lengths
- building a 3 or 4 cross wheel in symmetrical or asymmetrical patterns
- truing and tensioning a wheel
- wheel design and symmetry
- wheel dynamics and loading

#### Information/documents

Information/documents may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to designing and building bicycle wheels</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>

**RANGE STATEMENT****Quality requirements**

Quality requirements may include:

- regulations, including Australian standards
- internal organisational quality policies and procedures
- enterprise operations and procedures

**Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)****Unit sector**

Bicycle

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Wheels and Tyres

## AURBTJ3004 Repair and overhaul bicycle wheels and hubs

### Modification History

Release	Comment
Release 1	Replaces AURB318267A Repair/overhaul bicycle wheels and hubs Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to repair a range of bicycle wheels with different hub, spoke and rim configurations.</p> <p>It requires the ability to understand specifications and use tools and equipment to inspect, repair/overhaul and test bicycle wheels and hubs.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, repair and testing of bicycle wheels and hubs in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect bicycle wheel and hub	1.1. Check customer requirements and intended use of the unit in accordance with workplace procedures 1.2. Inspect bicycle wheel and hub for faults and worn or damaged components 1.3. Determine repairs by visual, aural and tactile inspections and measurements 1.4. Compare conditions found with bicycle wheel and hub specifications and customer use requirements 1.5. Identify repair options for bicycle wheel and hub in accordance with workplace procedures 1.6. Document and cost repairs and obtain customer approval for work to be undertaken
2. Prepare for repair/overhaul of bicycle wheel and hub	2.1. Plan repair/overhaul sequence, including post-repair testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare parts list and determine availability of replacement components 2.4. Identify additional persons to assist in repair process and confirm availability 2.5. Select tooling and equipment to meet job requirements and check for good working order
3. Repair/overhaul and test bicycle wheel and hub	3.1. Repair/overhaul bicycle wheel and hub according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle, maintain and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle wheel and hub specifications following repair/overhaul procedures 3.5. Operate repaired bicycle wheel and hub through full range, noting test results, including non-conformity 3.6. Check repaired bicycle wheel and hub, complete adjustments and alignments and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Update workplace records, customer file and warranty information as required by enterprise 4.3. Clean up work area and dispose of waste in accordance with workplace procedures



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to repair a range of bicycle wheels and hubs, perform tests and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning, scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- application of mechanical principles
- classification of bicycle wheels and identification of components
- purpose and requirements of bicycle wheels and their relationship to suspension, drivetrain, frame and steering systems
- purpose and requirements of a bicycle wheel hub and their relationship to suspension, wheels, drivetrain, frame and braking
- material used in bicycle wheels and hubs
- wheel and hub repair/overhaul procedures and techniques
- use of tooling and equipment
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to repair/overhaul of bicycle wheels and hubs
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to repair/overhaul of bicycle wheels and hubs



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- identify wear or faults in bicycle wheels and hubs
- repair a range of different bicycle wheels and hubs to manufacturer/component supplier specifications
- test bicycle wheels and hubs to manufacturer/component supplier specifications.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle wheels, hubs and components
  - equipment, hand and power tools appropriate to repairing wheels and hubs
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

**EVIDENCE GUIDE**

	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycle wheels and hubs

Bicycle wheels and hubs may include:

- spoked, disk and tri-spoked wheels
- steel, aluminium, deep dish, aero, composite material and disc type rims
- quick release, Allen head and nut wheel fasteners
- vertical and horizontal frame lugs
- high flange, low flange and integrated brake hubs
- disk, drum and coaster and internal foot brake hubs
- metal and composite hub material
- loose ball, cage and roller bearings
- steel, aluminium and composite spoke material
- straight gauge, double butted and bladed spokes
- spoke nipples
- spoke lacing patterns

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and wheel jigs

#### Materials

Materials may include:

- a range of bicycle wheels and hubs
- parts suitable for use in wheels and hubs
- lubricants
- cleaning materials

#### Wheel and hub repair methods

Wheel and hub repair methods are to include:

- replacing spokes
- tensioning spokes
- wheel truing
- rebuild/regrease front wheel hub
- rebuild/regrease rear wheel hub

#### Testing

Testing is to confirm:

- safety and efficiency

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• stable handling, turning and steering</li> <li>• no failure in parts of the bicycle</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to repairing bicycle wheels, hubs and components</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include</p>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"><li>• regulations, including Australian standards</li><li>• internal organisational quality policies and procedures</li><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Wheels and Tyres
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## AURBTK2001 Use and maintain specialised bicycle repair tools

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to select, use and maintain specialised tools used for bicycle service and repair.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to the use, service and maintenance of specialised tools in a bicycle workshop.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

### Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select and prepare specialised tools	<p>1.1. <b><i>Specialised bicycle repair tools</i></b> are selected to meet <b><i>workplace requirements</i></b></p> <p>1.2. Tools are prepared for use according to manufacturer and component supplier specifications</p> <p>1.3. <b><i>Workplace Health and Safety (WHS) requirements</i></b> are identified and applied</p>
2. Use specialised tools	<p>2.1. Tools are used to produce outcomes according to job requirements</p> <p>2.2. Tools are used in a safe manner to prevent injury to self and others</p> <p>2.3. Tools are used in a manner that does not cause damage to other workplace equipment</p>
3. Service and maintain specialised tools	<p>3.1. Tools are checked against manufacturer and component supplier recommendation to ensure safe operation</p> <p>3.2. Service and <b><i>maintenance operations</i></b> are carried out according to industry, workplace and WHS requirements</p> <p>3.3. Tools and equipment are checked and faulty items are identified and tagged</p>
4. Store and secure specialised tools	<p>4.1. Tools and equipment are checked, cleaned and stored according to workplace expectations</p> <p>4.2. Service schedule documentation is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal instructions
  - communicate information related to the use of tools and equipment
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to:
  - read and follow bicycle repair instruction
  - read and apply operating procedures
- numeracy skills to correctly interpret metric and imperial measurement systems
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities which implement and follow workplace procedures
- problem-solving skills to:
  - recognise a workplace problem or potential problem
  - refer problems outside area of responsibility to appropriate person
  - identify tool and equipment defects
- self-management skills to:
  - locate and identify appropriate specialised bicycle tools and equipment
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as manufacturer specification, industry codes of practice and workplace procedures
- technical skills to select, use, maintain and store specialised bicycle tools
- technology skills to use workplace technology to assist with work practices.

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements related to using specialised bicycle tools and equipment
- application and operation of specialised bicycle repair tools
- methods of identifying faults in specialised bicycle repair tools
- maintenance and storage procedures of specialised bicycle repair tools.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select appropriate specialised bicycle repair tools
- carry out a minimum of three bicycle service or repair tasks using specialised bicycle repair tools
- maintain and store specialised bicycle repair tools.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- use workplace practices and procedures
- follow WHS requirements
- applying environmental policy

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice

The following resources must be made available for the assessment of this unit:

- bicycles and bicycle components that require specialised bicycle repair tools
- specialised bicycle repair tools
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant

**EVIDENCE GUIDE**

contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Specialised bicycle repair tools*** may include:

- repair stand

- 

chain tool

- 

spoke wrench

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• tyre levers</li><li>• pedal wrench</li></ul>
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**RANGE STATEMENT**

- imperial cone wrenches metric and
- remover cassette lock-ring

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• chain whip</li><li>• bottom bracket cartridge tools</li></ul>
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**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• headset wrenches</li><li>• third hand</li></ul>
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**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• wrench</li></ul>	crank arm bolt
	<ul style="list-style-type: none"><li>• (puller)</li></ul>	crank arm remover

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• wrench chain-ring bolt</li><li>• suspension pump</li><li>• clipless pedal axle removal tool</li><li>• trueing jig</li></ul>
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**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• dishing gauge</li><li>• tensionometer spoke</li></ul>
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**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• schrader valve tool</li><li>• dropout alignment tool</li></ul>
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**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• alignment tools</li> <li>• headset installation</li> </ul>
<b>Workplace requirements</b> may include:	<ul style="list-style-type: none"> <li>• workplace reporting and recording procedures</li> <li>• safe work procedures</li> <li>• quality policies and procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications</li> <li>• work instruction</li> <li>• industry codes of practice.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include:</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• protective clothing and equipment</li><li>• use of tools and equipment</li><li>• handling of material</li><li>• use of fire-fighting equipment</li><li>• first aid equipment</li><li>• hazard control, including control of hazardous materials and toxic substances.</li></ul>
<i>Maintenance operations</i> may include:	<ul style="list-style-type: none"><li>• routine maintenance to specialised tools</li><li>• minor repairs to tools and equipment</li><li>• performing equipment calibration</li><li>• documenting and tagging faulty equipment.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Bicycle
<b>Unit sector</b>	Technical – Tools and Equipment

**Custom Content Section**

Not applicable.

## AURBTQ2001 Service bicycle drivetrain systems

### Modification History

Release	Comment
Release 1	Replaces AURB214670B Service bicycle drivetrain systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service and test bicycle drivetrain systems.</p> <p>It requires the ability to understand specifications and use tools and equipment to service and test bicycle drivetrain components and systems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, servicing and testing of bicycle drivetrain systems and components in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information on bicycle drivetrain system	1.1. Check customer requirements and confirm intended use of the unit being serviced 1.2. Inspect bicycle drivetrain system for faults and worn or damaged components 1.3. Research bicycle drivetrain system service requirements and check specifications 1.4. Determine condition of system by visual, aural and tactile inspections and measurements 1.5. Compare conditions found with bicycle drivetrain system specifications and customer use requirements
2. Prepare for service of bicycle drivetrain system	2.1. Plan service sequence, including post-service testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare parts list and determine availability of replacement components 2.4. Select tooling and equipment to meet job requirements and check to ensure they are in good working order
3. Service and test bicycle drivetrain system	3.1. Perform service of bicycle drivetrain system according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle drivetrain system specifications following service procedures 3.5. Operate bicycle drivetrain system through its full range, noting test results, including non-conformity 3.6. Check serviced bicycle drivetrain system, complete adjustments, and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Clean up work area and dispose of waste in accordance with workplace procedures 4.3. Update workplace records, customer file and warranty information as required by enterprise 4.4. Prepare accounts and invoices as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to service bicycle drivetrain system, test the unit and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine system condition and operation
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- manufacturer and/or component supplier specifications
- application of mechanical principles
- classification of bicycle drivetrain systems and identification of system components
- purpose and requirements of a bicycle drivetrain system and relationship to suspension, wheels, frame and braking system
- material used in bicycle drivetrain systems
- drivetrain lubricants
- drivetrain service procedures and techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to servicing bicycle drivetrain systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes related to servicing bicycle drivetrain systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service bicycle drivetrain systems to manufacturer/component supplier specifications
- test bicycle drivetrain systems to manufacturer/component supplier specifications.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and drivetrain components
  - equipment, hand and power tools appropriate to servicing bicycle drivetrains
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to

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	<p>ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Bicycles</b>	Bicycles may include: <ul style="list-style-type: none"> <li>• children and adult models of different heights</li> <li>• mountain, road, hybrid, BMX, track and trials models</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• hand-held power tooling</li> <li>• floor stands, workbench and drivetrain jigs</li> </ul>
<b>Drivetrain systemservicing</b>	Bicycle drivetrain system servicing may include: <ul style="list-style-type: none"> <li>• pedals</li> <li>• cranks</li> <li>• chains and chain wheels</li> <li>• cassette, cartridge and internal hub gear systems</li> <li>• manual mechanical, automatic, electro-mechanical and electric gear changers</li> <li>• integrated brake/gear lever systems</li> <li>• loose ball, needle and roller bearings</li> <li>• cables and cable liners</li> <li>• fixed and freewheel rear sprockets</li> <li>• lubricants and greases</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• drivetrain system parts</li> <li>• consumables</li> <li>• cleaning materials</li> </ul>
<b>Testing</b>	Testing is to confirm: <ul style="list-style-type: none"> <li>• safety and efficiency</li> <li>• stable handling, turning and steering</li> <li>• no failure in the drivetrain system</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• safe work procedures related to bicycle drivetrain systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Bicycle
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURBTQ3002 Repair bicycle drivetrain systems

### Modification History

Release	Comment
Release 1	Replaces AURB314666B Repair bicycle drivetrain systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform repair operations to bicycle drivetrain systems.</p> <p>It requires the ability to understand specifications and use tools and equipment to repair and test bicycle drivetrain components and systems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, repair and testing of bicycle drivetrain systems and components in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect bicycle drivetrain system	<ul style="list-style-type: none"><li>1.1. Inspect bicycle drivetrain system for faults and worn or damaged components</li><li>1.2. Determine repairs by visual, aural and tactile inspections and measurements</li><li>1.3. Compare conditions found with bicycle drivetrain system specifications and customer use requirements</li><li>1.4. Identify repair options for drivetrain system following workplace procedures</li><li>1.5. Document and cost repairs and obtain customer approval for work to be undertaken</li></ul>
2. Prepare for repair of bicycle drivetrain system	<ul style="list-style-type: none"><li>2.1. Plan repair sequence, including post-repair testing and checking process</li><li>2.2. Determine availability of tooling and equipment</li><li>2.3. Prepare parts list and determine availability of replacement components</li><li>2.4. Identify additional persons to assist in repair process and make arrangements</li><li>2.5. Select tooling and equipment to meet job requirements and check to ensure they are in good working order</li></ul>
3. Repair and test bicycle drivetrain system	<ul style="list-style-type: none"><li>3.1. Perform repair of bicycle drivetrain system according to plan</li><li>3.2. Use personal safety equipment and precautions to protect others in the workplace</li><li>3.3. Handle and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements</li><li>3.4. Check customer requirements and bicycle drivetrain system specifications following repair procedures</li><li>3.5. Operate repaired bicycle drivetrain system through its full range, noting test results, including non-conformity</li><li>3.6. Check repaired bicycle drivetrain system, complete adjustments and alignments, and prepare unit for delivery</li></ul>
4. Complete work and clean up	<ul style="list-style-type: none"><li>4.1. Store portable tooling and equipment in approved designated areas</li><li>4.2. Clean up work area and dispose of waste in accordance with workplace procedures</li><li>4.3. Update workplace records, customer file and warranty information as required by enterprise</li><li>4.4. Prepare accounts and invoices as required by enterprise</li></ul>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to repair bicycle drivetrain system, test the unit and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine system condition and operation
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- manufacturer and/or component supplier specifications
- application of mechanical and electronic principles
- classification of bicycle drivetrain systems and identification of system components
- purpose and requirements of a bicycle drivetrain system and relationship to suspension, wheels, frame and braking system
- material used in bicycle drivetrain systems
- drivetrain lubricants
- drivetrain repair procedures and techniques
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice regulations, including WHS, personal safety and environment, relevant to repairing bicycle drivetrain systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes related to repairing bicycle drivetrain systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- repair a range of bicycle drivetrain systems to manufacturer/component supplier specifications
- test bicycle drivetrain systems to manufacturer/ component supplier specifications
- complete repair documentation.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and drivetrain components
  - equipment, hand and power tools appropriate to repairing bicycle drivetrains
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

**EVIDENCE GUIDE**

	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Bicycles</b>	Bicycles may include: <ul style="list-style-type: none"> <li>• children and adult models of different heights</li> <li>• mountain, road, hybrid, BMX, track and trials models</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• hand-held power tooling</li> <li>• floor stands, workbench and drivetrain jigs</li> </ul>
<b>Drivetrain system repairs</b>	Bicycle drivetrain system repair is to include: <ul style="list-style-type: none"> <li>• pedals</li> <li>• cranks</li> <li>• chains and chain wheels</li> <li>• cassette, cartridge and internal hub gear systems</li> <li>• manual mechanical, automatic, electro-mechanical and electric gear changers</li> <li>• integrated brake/gear lever systems</li> <li>• loose ball, needle and roller bearings</li> <li>• cables and cable liners</li> <li>• fixed and freewheel rear sprockets</li> <li>• lubricants and greases</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• drivetrain system parts</li> <li>• consumables</li> <li>• cleaning materials</li> </ul>
<b>Testing</b>	Testing is to confirm: <ul style="list-style-type: none"> <li>• safety and efficiency</li> <li>• stable handling, turning and steering</li> <li>• no failure in the drivetrain system</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• safe work procedures related to bicycle drivetrain systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURBTR3001 Service electric power assist bicycles

### Modification History

Release	Comment
Release 1	Replaces AURB318301A Service electric power assist bicycles Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform routine maintenance on electric power assisted bicycle systems and components.</p> <p>It requires the ability to identify maintenance requirements, interpret manufacturer's instructions and specifications, service the additional electric bicycle components, and test the bicycle for safe and efficient operation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake routine maintenance of electric bicycles in a bicycle retail, service and repair environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to maintain bicycle	1.1. Confirm customer requirements and gain approval for work in accordance with workplace procedures 1.2. Identify and source technical information and specifications 1.3. Check tooling and equipment for availability, conformity with specifications and safe condition 1.4. Prepare work area and set up equipment and materials
2. Perform maintenance on bicycle	2.1. Inspect bicycle for faults and worn or damaged components using visual, aural and tactile inspections, and measurements 2.2. Check electrical components, battery condition and motor connectors at plug located on rear stay or front fork 2.3. Compare conditions found with bicycle specifications and customer requirements 2.4. Document any components needing repair additional to routine maintenance, and report to appropriate person or notify customer in accordance with workplace procedures 2.5. Plan maintenance sequence, including post-maintenance testing and checking process 2.6. Select and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 2.7. Perform maintenance operations according to plan and without damage to bicycle components or equipment 2.8. Replace non-serviceable and broken parts in accordance with workplace procedures 2.9. Check bicycle operation in accordance with workplace procedures
3. Prepare bicycle for return to customer	3.1. Clean and prepare bicycle for delivery to customer 3.2. Clean and store portable tooling and equipment in approved designated areas 3.3. Complete workplace records, customer file and warranty information as required by enterprise 3.4. Clean up work area and dispose of waste materials in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment, including a multimeter to maintain an electric power assist bicycle, test the unit and make adjustments and prepare bicycle for delivery to customer
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine safe operation to specifications
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning, scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle terminology
- operating principles of electric bicycles
- understanding of throttle response, power and performance, pedal assist function and throttle function
- manufacturer and/or component supplier specifications
- component function and application
- maintenance procedures
- testing procedures and adjustment methods
- tools and equipment used in bicycle maintenance
- Australian standards applicable to electric power assist bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to bicycle maintenance
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to bicycle maintenance

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct maintenance operations without damage to components or tooling and equipment
- maintain a power assisted bicycle in compliance with Australian standards and workplace requirements.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - an electric power assist bicycle
  - equipment, hand and power tools appropriate to maintaining electric bicycles
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

**EVIDENCE GUIDE**

	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Electric power assist bicycles

Electric power assist bicycles may include:

- bicycle styled products with both throttle and PAS functions that look and function like a bicycle with or without the motor engaged, and with 200 watts of rated power at the wheel

Newer laws to be implemented within two years will allow for 250 watts and throttle to 6 km/h then PAS

Note: Older styled scooter type products with lead acid batteries and foot platform DO NOT meet current regulations

#### Bicycle components

Electric power assist bicycle components, additional to normal bicycles, may include:

- motor hubs and heavy duty spokes
- electric controllers
- battery and charger

#### Maintenance items

Maintenance items may include:

- battery charging
- controller operation
- wiring
- connectors at motor plug, controller, brake cut outs, throttle and PAS sensor

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- electrical meters
- hand-held power tooling
- floor stands, workbench and air tooling

#### Materials

Materials may include:

- lubricants
- tapes
- fitting consumables
- cleaning materials

#### Testing

Testing is to confirm:

- safety and efficiency

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>proper operation of electric assist</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>hardcopy and electronic media</li> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>safe work procedures related to maintaining electric power assist bicycles</li> <li>regulatory/legislative requirements pertaining to bicycle safety</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> <li>instructions issued by authorised enterprise or external persons</li> <li>Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>personal protective equipment and clothing</li> <li>safety equipment</li> <li>first aid equipment</li> <li>hazard and risk control</li> <li>elimination of hazardous materials and substances</li> <li>manual handling, including shifting, lifting and carrying</li> <li>emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>award and enterprise agreements</li> <li>industrial relations</li> <li>Australian standards</li> <li>Australian Design Rules</li> <li>confidentiality and privacy</li> <li>WHS</li> <li>the environment</li> <li>equal opportunity</li> <li>anti-discrimination</li> <li>relevant industry codes of practice</li> <li>duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURBT2001 Fit and adjust bicycle accessories

### Modification History

Release	Comment
Release 1	Replaces AURB232265B Fit and adjust bicycle accessories Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to fit and adjust electrical and non-electrical bicycle accessories.</p> <p>It requires the ability to understand specifications and use tools and equipment to fit and adjust bicycle accessories to Australian standards.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the removal, replacement, fitting and adjustment of bicycle accessories in a bicycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Check and confirm customer requirements in accordance with workplace procedures</li><li>1.2. Research bicycle accessory fitting requirements and check specifications and applicable standards</li><li>1.3. Check tooling and equipment prior to use, for availability and conformity with specifications and safe condition</li><li>1.4. Determine condition of accessories by inspection and measurement and compare with bicycle accessory specifications and customer use requirements</li></ul>
2. Remove bicycle accessories	<ul style="list-style-type: none"><li>2.1. Plan removal sequence</li><li>2.2. Remove accessories without causing damage to frame or other components or accessories</li><li>2.3. Process removed accessories for repair or disposal in accordance with workplace procedures</li></ul>
3. Fit, test and adjust bicycle accessories	<ul style="list-style-type: none"><li>3.1. Determine correct positioning of accessories with regard to operational requirements and aesthetics</li><li>3.2. Fit bicycle accessories according to plan using personal safety equipment and precautions to protect others in the workplace</li><li>3.3. Handle and use tooling and equipment in accordance with workplace health and safety (WHS) requirements</li><li>3.4. Operate fitted bicycle accessories through full range, noting test results, including non-conformity</li><li>3.5. Check fitted bicycle accessories, complete adjustments, and prepare unit for delivery</li></ul>
4. Complete work and clean up	<ul style="list-style-type: none"><li>4.1. Store portable tooling and equipment in approved designated areas</li><li>4.2. Update workplace records, customer file and warranty information as required by enterprise</li><li>4.3. Clean up work area and dispose of waste in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to remove, replace fit and adjust bicycle accessories
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine safe fitting and operation
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- classification of accessory and fitting types
- manufacturer and/or component supplier specifications
- purpose and requirements of accessories and fittings and their relationship to safe bicycle use
- type, range and content of component/accessory fitting instructions
- material used in accessories and fittings
- testing procedures and adjustment methods
- use of tooling and equipment
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to removing, replacing, fitting and adjusting bicycle accessories
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to removing, replacing, fitting and adjusting bicycle accessories

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct removal, replacement, fitting and adjustment of a range of common accessories in accordance with workplace and manufacturer/component supplier requirements
- complete removal, replacement, fitting and adjustment of accessories within workplace timeframes
- present bicycle for delivery to customer in compliance with workplace requirements and Australian standards.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle models and accessories
  - equipment, hand and power tools appropriate to removal, replacement, fitting and adjustment of accessories
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and

**EVIDENCE GUIDE**

	<p>Knowledge.</p> <ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Bicycles

Bicycles may include:

- those with and without gears, and with lever operated brakes
- children and adult models of different heights
- mountain, road, hybrid, BMX, track and trials models

#### Accessories

Accessories may include:

- battery, solar or dynamo lighting systems
- electronic equipment
- heart rate monitors
- gear changers
- computers
- speedometers and odometers
- child carriers, luggage carriers, bags and attachment frames
- seats
- bicycle carriers
- pedal cleats
- water bottle frames
- tri bars

#### Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and air tooling

#### Materials

Materials may include:

- tapes
- fitting consumables
- cleaning materials

#### Testing

Testing is to confirm:

- safety and efficiency
- stable handling, turning and steering
- no failure in parts of the bicycle
- no loosening or loss of components or accessories

#### Information/documents

Information/documents may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to removing, replacing, fitting and adjusting bicycle accessories</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>

**RANGE STATEMENT****Quality requirements**

Quality requirements may include:

- regulations, including Australian standards
- internal organisational quality policies and procedures
- enterprise operations and procedures

**Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)****Unit sector**

Bicycle

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Accessories

## AURBTY3001 Service and repair bicycle frames

### Modification History

Release	Comment
Release 1	Replaces AURB328267A Service and repair bicycle frames Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to inspect, plan and safely service, repair and test bicycle frames.</p> <p>It requires the ability to interpret specifications, assess the condition of the frame, and to select and use tooling and equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake service and repair of a range of bicycle frames in a bicycle servicing and repair environment.</p> <p>The repair of carbon fibre bicycle frames is covered by AURBTY4003 Assess carbon fibre frames for repair.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm customer requirements and intended use of the unit in accordance with workplace procedures 1.2. Identify and check bicycle frame service and repair requirements and specifications 1.3. Check tooling and equipment for availability, conformity with specifications and safe condition 1.4. Prepare work area and set up equipment and materials
2. Inspect bicycle frame	2.1. Inspect bicycle frame for faults, wear or damage using visual, aural and tactile inspections and measurements 2.2. Compare conditions found with bicycle frame specifications and customer requirements 2.3. Identify service and repair options for bicycle frame 2.4. Document and cost service and repair items for customer approval in accordance with workplace procedures 2.5. Obtain customer approval for work to be undertaken
3. Prepare for service and repair of bicycle frame	3.1. Plan service and repair sequence and determine availability of tooling and equipment 3.2. Ensure service and repair sequence plan includes post-service testing and checking process 3.3. Prepare list of parts and materials and determine availability 3.4. Identify need for additional persons to assist in repair process and make arrangements 3.5. Select and check tooling and equipment to meet job requirements
4. Service and repair bicycle frame	4.1. Perform service and repair operations for bicycle frame according to plan 4.2. Use personal safety equipment and take precautions to protect others in the workplace 4.3. Use and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 4.4. Check customer requirements and bicycle frame specifications in accordance with workplace procedures
5. Test bicycle frame	5.1. Operate bicycle through its full range, noting test results, including non-conformity 5.2. Check bicycle frame, complete adjustments and prepare unit for delivery 5.3. Clean and store portable tooling and equipment in approved designated areas 5.4. Complete workplace records, customer file and warranty

ELEMENT	PERFORMANCE CRITERIA
	information as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing, repairing and testing of bicycle frames
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports, complete records and interpret technical information and specifications
- numeracy skills to the level required to correctly count and measure to determine bicycle frame condition and operation
- problem-solving skills to the level required to plan and organise activities and establish diagnostic processes which identify methods of servicing, repairing and testing bicycle frames
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- purpose and requirements of bicycle frame systems and their relationship to braking, wheels, drivetrain and steering system
- classification of bicycle frames and identification of system components
- material used in bicycle frames
- application of frame design principles
- frame service, repair and testing procedures and techniques
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to servicing and repairing bicycle frames
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes related to servicing and repairing bicycle frames

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- inspect a range of bicycle frames and components and accurately identify required service and repair options
- service and repair a range of bicycle frames to manufacturer/component supplier specifications
- test bicycle frames to manufacturer/component supplier specifications.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle frame configurations
  - material relevant to servicing and repairing bicycle frames
  - equipment and hand and power tooling appropriate to servicing and repairing bicycle frames
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Bicycle frames</b>	<p>Bicycle frames may include:</p> <ul style="list-style-type: none"> <li>• all-terrain, touring, racing, recumbent and BMX bicycles</li> <li>• seat pillars and fasteners</li> <li>• bottom brackets, cartridge, cup, loose and caged bearings</li> <li>• left and right hand thread types</li> <li>• composite material</li> <li>• painted, anodised, natural state and polished surface finishes</li> </ul>
<b>Servicing and repair methods</b>	<p>Servicing and repair methods are to include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing</li> <li>• repair, replacement and refinishing of frame components</li> <li>• welding, brazing and bonding processes</li> <li>• communicating with customers</li> <li>• documenting and reporting on service</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specific service and repair and general workshop equipment and tooling</li> <li>• welding, brazing and bonding equipment and material</li> <li>• floor stands, workbench and air tooling</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• welding consumables</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to bicycle frames</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**RANGE STATEMENT****WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care

**Environmental requirements**

Environmental requirements may include:

- waste management
- noise
- dust
- clean-up management

**Quality requirements**

Quality requirements may include:

- regulations, including Australian standards
- internal organisational quality policies and procedures
- enterprise operations and procedures

**Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Chassis and Frame
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## AURBTY4002 Design and build bicycle frames

### Modification History

Release	Comment
Release 1	Replaces AURB428201A Design and build a bicycle frame Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to calculate design specifications and custom build a bicycle frame.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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### Application of the Unit

Application of the unit	This unit applies to individuals who apply mechanical principles and measurements to design and build a custom bicycle frame.  The unit applies to individuals working in a bicycle retail, service and repair environment.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information on bicycle frame requirements	1.1. Discuss and confirm customer requirements including intended use of the unit, preferred design, frame materials, construction methods and finish 1.2. Use sizing cycle, observation and measurements to assess physical attributes and riding style of client 1.3. Research bicycle frame design principles and check component suppliers and specifications
2. Design bicycle frame and specify materials and components	2.1. Design a frame to customer measurements and requirements, using a computer-aided design (CAD) program or other means 2.2. Specify frame tubing in terms of diameter and wall thickness to achieve durability and use requirements according to established industry practices 2.3. Prepare parts list and determine availability of parts and materials 2.4. Document and cost custom frame job and obtain customer approval for work to be undertaken 2.5. Place order with suppliers for frame materials, parts and components
3. Prepare for frame building	3.1. Plan frame building sequence and determine availability of tooling and equipment 3.2. Lay out parts and check for damaged and/or missing components 3.3. Select and check tooling and set up jig 3.4. Set up welding, brazing or bonding equipment and materials 3.5. Identify need for additional persons to assist in frame building process and make arrangements
4. Build bicycle frame	4.1. Perform frame building operations according to plan 4.2. Use personal safety equipment and take precautions to protect others in the workplace 4.3. Use and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 4.4. Check angles, measurements and frame alignment throughout the operation and make adjustments as required
5. Paint and/or finish frame	5.1. Prepare frame for painting and finishing 5.2. Prepare and apply paint or finish in accordance with manufacturer recommendations 5.3. Follow appropriate safety precautions, including the use of personal protective equipment and adequate ventilation

ELEMENT	PERFORMANCE CRITERIA
	5.4.Clean up equipment in accordance with environmental procedures
6. Prepare frame for delivery and clean up	6.1.Check the finished bicycle frame and prepare unit for delivery 6.2.Clean and store portable tooling and equipment in approved designated areas 6.3.Clean work area and dispose of waste in accordance with workplace procedures 6.4.Complete workplace records, customer file and warranty information as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use appropriate software, tools and equipment to design and build a bicycle frame
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to research information related to bicycle frame design and components and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements, calculate ratios and interpret specifications
- problem-solving skills to the level required to apply bicycle design principles and measurements to specify and select suitable components for a custom bicycle frame and recognise design features that detract from durability
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- purpose and requirements of bicycle frame systems and their relationship to braking, wheels, drivetrain and steering system
- classification of bicycle frames and identification of system components
- materials used in bicycle frames
- application of frame design principles
- causes of frame failures and design alternatives to reduce likelihood of failure
- frame construction procedures and techniques
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to designing and building bicycle frames
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to designing and building bicycle frames

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- communicate effectively with customer to determine requirements
- apply mechanical principles and measurements to design a bicycle frame to meet client requirements
- select frame components, materials and equipment to meet design requirements
- observe safety procedures and requirements
- use appropriate construction procedures and techniques to build a bicycle frame to design specifications.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of bicycle frame parts and components
  - equipment and tools appropriate to constructing bicycle frames
  - BikeCAD or other design tools
  - technical specifications and standards
  - workplace documentation.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

**EVIDENCE GUIDE**

	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Bicycle frames</b>	<p>Bicycle frames may include:</p> <ul style="list-style-type: none"> <li>• all-terrain, touring, racing, recumbent and BMX bicycle frames</li> <li>• steel, lugged, brazed or welded</li> <li>• titanium</li> <li>• composite material</li> <li>• aluminium</li> <li>• lugged, brazed or welded</li> <li>• painted, anodised, natural state and polished surface finishes</li> </ul>
<b>Bicycle measurements</b>	<p>Bicycle measurements may include:</p> <ul style="list-style-type: none"> <li>• head tube length and angle (steering axis)</li> <li>• bottom bracket drop</li> <li>• seat tube length and angle</li> <li>• top tube length</li> <li>• saddle setback</li> <li>• chainstay length</li> <li>• fork rake or offset</li> <li>• fork trail and bicycle stability</li> </ul>
<b>Client physical attributes</b>	<p>Client physical attributes to be considered may include:</p> <ul style="list-style-type: none"> <li>• height</li> <li>• body shape and weight distribution</li> <li>• length of arms and legs</li> <li>• fitness, agility and injuries</li> </ul>
<b>Design considerations</b>	<p>Design considerations may include:</p> <ul style="list-style-type: none"> <li>• common reasons for frame failure</li> <li>• design features that affect durability</li> <li>• balancing weight reduction, durability (fatigue) and impact resistance (collision)</li> <li>• characteristics of tubes with equal weight but differing wall thicknesses, stiffness and failure</li> <li>• features and characteristics of advanced fixtures</li> </ul>
<b>Design and build methods</b>	<p>Design and build methods may include:</p>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• CAD programs</li> <li>• tube cutting, mitreing and preparation</li> <li>• welding, brazing and bonding processes</li> <li>• correcting distortion and misalignment</li> <li>• painting and surface finishing</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling and equipment</li> <li>• welding, brazing and bonding equipment and material</li> <li>• frame jig, workbench and air tooling</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• tubing, lugs, bottom bracket shells, fork crowns and dropouts</li> <li>• welding consumables</li> <li>• paint, surface preparation and finishes</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to designing and building bicycle frames</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• hazardous gases and fumes</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Chassis and Frame
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## AURBTY4003 Assess carbon fibre frames for repair

### Modification History

Release	Comment
Release 1	Replaces AURB428202A Assess carbon fibre frames for repair Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to determine the extent of damage to carbon fibre bicycle frames, carry out simple repairs and facilitate complex repairs.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the repair of carbon fibre bicycle frames in a bicycle retail, service and repair environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect bicycle frame	1.1. Gather bicycle history, including riding incidents and accidents, by discussion with customer 1.2. Inspect bicycle frame for faults, wear or damage using visual, aural and tactile inspections and measurements 1.3. Arrange for non-destructive testing, if required, and where available 1.4. Assess repair or replacement options for bicycle frame 1.5. Document and cost repair for customer approval in accordance with workplace procedures 1.6. Obtain customer approval for work to be undertaken
2. Prepare for repair of bicycle frame	2.1. Plan repair sequence, including post-repair testing and checking process 2.2. Prepare list of parts and materials and determine availability 2.3. Identify need for additional persons to assist in repair process and make arrangements 2.4. Select and check tooling and equipment to meet job requirements 2.5. Prepare work area and set up equipment and materials
3. Repair bicycle frame	3.1. Use personal safety equipment and take precautions to protect others in the workplace 3.2. Use and maintain tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.3. Prepare surface for repair avoiding contamination 3.4. Perform repair operations for bicycle frame according to plan 3.5. Seal the repaired area 3.6. Check bicycle frame specifications and test integrity of repair in accordance with workplace procedures
4. Complete work and clean up	4.1. Clean bicycle frame and prepare unit for delivery 4.2. Clean and store portable tooling and equipment in approved designated areas 4.3. Complete workplace records, customer file and warranty information as required by enterprise

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology, tools and equipment related to testing and repairing carbon fibre bicycle frames
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to research and interpret technical information and specifications, understand information related to work orders, plans and safety procedures, prepare reports and complete records
- numeracy skills to the level required to correctly read specifications and take measurements to determine bicycle frame condition
- problem-solving skills to the level required to plan and organise activities and establish diagnostic processes which identify methods of testing and repairing carbon fibre bicycle frames
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- carbon fibre structure, properties and characteristics
- repair materials properties and applications
- purpose and requirements of bicycle frame systems and their relationship to braking, wheels, drivetrain and steering system
- classification of bicycle frames and identification of system components
- application of frame design principles
- manufacturing processes of carbon fibre frames
- causes and implications of damage to carbon fibre frames
- carbon fibre repair methods and procedures
- non-destructive testing methods and techniques
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to repairing carbon fibre bicycle frames
- organisational policies and procedures, including quality requirements, reporting and recording

**REQUIRED SKILLS AND KNOWLEDGE**

procedures, and work organisation and planning processes, related to repairing carbon fibre bicycle frames

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- inspect a range of damaged carbon fibre frames and accurately assess repair options
- complete preparatory activity in a systematic manner
- complete minor repairs to a carbon fibre bicycle frame, including a cracked top tube, seat tube and seat stay.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of damaged carbon fibre bicycle frames
  - material relevant to repairing carbon fibre bicycle frames
  - equipment and hand and power tooling appropriate to repairing carbon fibre bicycle frames
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to

**EVIDENCE GUIDE**

	<p>ensure its correct interpretation and application.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Carbon fibre bicycle frames

Carbon fibre bicycle frames may include:

- all-terrain, touring, racing, recumbent and BMX bicycles
- one piece construction
- tubes joined directly or with lugs

#### Repair assessment

Repair assessment may include:

- bicycle history and cause of damage
- structural importance of, and stresses borne by, damaged area
- frame construction method
- cracks, chips, dents, loose joins and misalignment
- non-destructive testing (X-ray, ultrasonic and acoustic)
- strength and integrity of repair

#### Tooling and equipment

Tooling and equipment may include:

- specific repair and general workshop equipment and tooling
- sanding tools
- floor stands, workbench and frame jig
- special purpose jigs and moulds
- vacuum system
- curing oven

#### Materials

Materials may include:

- carbon fibre fabric and tapes of various grades and weights (FAW)
- unidirectional and woven fabric and braided sock
- epoxy resin of repair qualified type
- shrink tape
- vacuum bag consumables
- suitable sandpaper (aluminium oxide)
- cleaning materials

#### Information/documents

Information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- safe work procedures related to bicycle frames

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• manufacturer specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>

**RANGE STATEMENT****Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)****Unit sector**

Bicycle

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Chassis and Frame

## AURETA5001 Analyse and evaluate electrical and electronic faults in electric over-hydraulic systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT575193A Analyse and evaluate electrical and electronic faults in electric over hydraulic systems</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electric over hydraulic systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning electric over hydraulic systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Electric over hydraulic system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary electric over hydraulic systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the types, functions and operations of electric over hydraulic systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within light vehicle, mobile plant, heavy vehicle, light marine electric over hydraulic systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance, discrete electronic components, logic families and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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| <ul style="list-style-type: none"><li>• general knowledge of personal computer operations.</li></ul> |
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## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three different electric over hydraulic systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different electric over hydraulic systems.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, electric over hydraulic systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<b>Method of assessment</b>	<p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to</p>

<b>EVIDENCE GUIDE</b>	
	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Failure analysis and evaluation process

The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.

#### Electric over hydraulic systems

Electric over hydraulic systems are characterised as those using solenoids to control hydraulic flow and they may include integrated computer controlled systems. Examples are garbage compactors, crane rams, steering control, excavator bucket control, steering rudder control.

#### Electric over hydraulic system electrical and electronic failures

Electric over hydraulic system electrical and electronic failures covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.

#### Electric over hydraulic system failures

Electric over hydraulic system failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.

#### Unit context

- WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.
- Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.
- Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.

#### Evaluative criteria

Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.

#### Isolation procedures

Equipment isolation procedures are to be to industry and enterprise

<b>RANGE STATEMENT</b>	
	standards and are to include where appropriate the disarming of supplementary restraint systems (SRS) by manufacturer/component supplier specifications.
<b>Testing equipment</b>	Testing equipment is to include analogue and digital multimeters, lab oscilloscopes, data scanners, test lights, test LEDs and pulse generators, and may include other manufacturer/component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to electric over hydraulic systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging electric over hydraulic system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## **AURETA5002 Analyse and evaluate electrical and electronic faults in safety systems**

### **Modification History**

<b>Release</b>	<b>Comment</b>
<b>Release 1</b>	Replaces AURT575593A Analyse and evaluate electrical and electronic faults in safety systems  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### **Unit Descriptor**

<b>Unit descriptor</b>	This unit covers the competence to analyse and evaluate electrical and electronic faults in safety systems in order to initiate action to sustain, vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### **Application of the Unit**

<b>Application of the unit</b>	It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.  The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.
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### **Licensing/Regulatory Information**

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning safety systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Safety system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary safety systems, monitoring and testing processes, diagnostic methods and options, and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- basic mechanical theory covering the concepts and principles of mechanical, and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the types, functions and operations of safety systems.
- general knowledge of acoustics, human hearing system, radio waves, amplitude modulation, frequency modulation, wavelength, stereo and signal processing and swr.
- general knowledge of the concepts, types, functions, operations and limitations of electromechanical and electronic sub-systems within light vehicle, mobile plant, heavy vehicle and light marine safety systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetics, inductance, discrete electronic components, logic families, and radio frequency.
- general knowledge of the theory of diagnosis, including concept, design and planning
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li><li>• general knowledge of personal computer operation.</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three different electronic safety systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different electronic safety systems.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, operational safety systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to

## EVIDENCE GUIDE

	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Safety systems</b>	Safety systems in this unit are to include fire suppressing, work load detecting, tyre pressure control, speed/load limiting, traction control, seat belt pre-tensioning, roll over protection, object detection, navigation aids, intelligent transport systems, intelligent SRS systems, adaptive cruise control, multi-class Bus systems, active and passive collision avoidance, infrared vision, lighting, windscreen wiper control, depth sounders, emergency distress systems, and CB and marine radio.
<b>Safety systems electrical and electronic failures</b>	Safety systems electrical and electronic failures covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Safety systems failures</b>	Safety systems failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based

<b>RANGE STATEMENT</b>	
	criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards and are to include the disarming of supplementary restraint systems (SRS) by manufacturer/ component supplier specifications.
<b>Testing equipment</b>	Testing equipment may include analogue and digital multimeters, data scanners, test lights, test LEDs, lab oscilloscopes, acoustic analysers and manufacturer/ component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to automotive safety systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to automotive safety system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURETA5003 Analyse and evaluate electrical and electronic faults in monitoring and protection systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT575693A Analyse and evaluate electrical and electronic faults in monitoring/protection systems</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic faults in monitoring/protection systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning monitoring/protection systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Monitoring/protection system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary monitoring/protection systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the types, functions and operations of monitoring/protection systems.
- general knowledge of the concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within light vehicle, mobile plant, heavy vehicle and light marine monitoring/protection systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetics, inductance, discrete electronic components, logic families, and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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| <ul style="list-style-type: none"><li>• general knowledge of personal computer operation.</li></ul> |
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three different automotive monitoring/protection systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different automotive monitoring/protection systems.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, operational monitoring/protection systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to

<b>EVIDENCE GUIDE</b>	
	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Systems monitored</b>	Systems monitored are to include engine, transmission/ driveline, body, auxiliary systems, safety critical systems and shutdown.
<b>Monitoring/protection systems</b>	Monitoring/protection systems are to cover display types, including LCD, VFD, CRT, HUD, reconfigurable systems, electronic analogue display, on-board diagnostics, remote/wireless monitoring systems and multi-class bus systems.
<b>Monitoring/protection systems electrical and electronic failures</b>	Monitoring/protection systems electrical and electronic failures covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Monitoring/protection systems failures</b>	Monitoring/protection systems failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.

<b>RANGE STATEMENT</b>	
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards and are to include the disarming of supplementary restraint systems (SRS) by manufacturer/ component supplier specifications.
<b>Testing equipment</b>	Testing equipment is to include analogue and digital multimeters, lab oscilloscopes, data scanners, test lights and test LEDs, and may include manufacturer/component supplier testing equipment and pulse generators.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to automotive monitoring/protection systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to automotive monitoring/protection system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURETA5004 Analyse and evaluate electrical and electronic faults in convenience and entertainment systems

### Modification History

Release	Comment
Release 1	Replaces AURT575893A Analyse and evaluate electrical and electronic faults in convenience and entertainment systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to analyse and evaluate electrical and electronic faults in convenience and entertainment systems in order to initiate action to sustain, vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.  The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning convenience and entertainment systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Convenience and entertainment system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary convenience and entertainment systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- basic mechanical theory covering the concepts and principles of mechanical, and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the types, functions and operations of convenience and entertainment systems.
- general knowledge of the concepts, types, functions, operations and limitations of electromechanical and electronic sub-systems within convenience and entertainment systems.
- general knowledge of acoustics, human hearing system, radio waves, amplitude modulation, frequency modulation, wavelength, stereo and signal processing and SWR.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetics, inductance, radio frequency, discrete electronic components, logic families, dc motors and solenoids.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
equipment. <ul style="list-style-type: none"><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li><li>• general knowledge of personal computer operation.</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three different convenience and entertainment systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different convenience and entertainment systems.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, operational convenience and entertainment systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to

<b>EVIDENCE GUIDE</b>	
	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Failure analysis and evaluation process</b>	<p>The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.</p>
<b>Convenience and entertainment systems</b>	<p>Convenience and entertainment systems in this unit are to include telematic controls and multi-media or wheels, vehicle acoustics, tilt/trim, winch, voltage reducers, voltage inverters, central locking, power windows, sun roof, seat positioning, mirror positioning, steering wheel positioning, seatbelt positioning and multi-class bus systems.</p>
<b>Entertainment systems</b>	<p>Entertainment systems in this unit are to include audio and visual units, compact discs, analogue tapes, radio, speaker types, amplifiers, crossovers, balancers, aerials and multi-class bus systems.</p>
<b>Convenience and entertainment systems failures</b>	<p>Convenience and entertainment systems failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.</p>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	<p>Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.</p>
<b>Isolation procedures</b>	<p>Equipment isolation procedures are to be to industry and enterprise standards and are to include the disarming of supplementary</p>

<b>RANGE STATEMENT</b>	
	restraint systems (SRS) by manufacturer/ component supplier specifications.
<b>Testing equipment</b>	Testing equipment is to include analogue and digital multimeters, data scanners, test lights, test LEDs, lab oscilloscopes, acoustic analysers and manufacturer/ component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, sound quality, SWR, winch, voltage reducers, voltage inverters, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> </ul>
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to automotive convenience and entertainment systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to convenience and entertainment system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURETA5005 Analyse and evaluate electrical and electronic faults in theft-deterrent systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT575993A Analyse and evaluate electrical and electronic faults in theft deterrent systems</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic faults in theft deterrent systems in order to initiate action to sustain, vary or enhance performance. It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>This unit of competence forms part of the inventory for an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning theft deterrent systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Theft deterrent system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstances, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary theft deterrent systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the concepts, types, functions, operations and limitations theft deterrent systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetics, inductance, discrete electronic components, logic families and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.
- general knowledge of personal computer operation.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three different theft deterrent systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different theft deterrent systems.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<p><b>Context of, and specific resources for assessment</b></p>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, operational theft deterrent systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<p><b>Method of assessment</b></p>	<p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to</p>

## EVIDENCE GUIDE

	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Theft deterrent systems</b>	Theft deterrent systems are to include remote keyless entry (RKE), immobiliser system design, passive entry systems, two-way RKE, fingerprint technologies, rolling codes, transmitter and receiver operation and satellite systems.
<b>Theft deterrent systems electrical and electronic failures</b>	Theft deterrent systems electrical and electronic failures covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Theft deterrent systems failures</b>	Theft deterrent systems failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.

<b>RANGE STATEMENT</b>	
<b>Testing equipment</b>	Testing equipment is to include analogue and digital multimeters, lab oscilloscopes, data scanners, test lights, test LEDs, and may include manufacturer/component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to theft deterrent systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to theft deterrent system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURETA5006 Analyse and evaluate electrical and electronic faults in climate-control systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT576193A Analyse and evaluate electrical and electronic faults in climate control systems</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic faults in climate control systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning climate control systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Climate control system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary climate control systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- in depth knowledge of air conditioning and heating principles.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the types, functions and operations of climate control systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the concepts, types, functions, operations and limitations of electro mechanical and fluid sub-systems within climate control systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance, discrete electronic components, logic families and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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| <ul style="list-style-type: none"><li>• general knowledge of personal computer operation.</li></ul> |
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## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three different climate control systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different climate control systems.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<p><b>Context of, and specific resources for assessment</b></p>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, operational climate control systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<p><b>Method of assessment</b></p>	<p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to</p>

EVIDENCE GUIDE	
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	be transferred to other circumstances.
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	Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
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## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Climate control systems</b>	Climate control systems are systems controlled by digital computer to maintain the in-cabin temperature selected by the operator, independent of the influence of external climatics. It includes air conditioning, heating, blending systems and multi-class bus systems.
<b>Climate control systems electrical and electronic failures</b>	Climate control systems electrical and electronic failures covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Climate control systems failures</b>	Climate control systems failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards and are to include the disarming of supplementary

<b>RANGE STATEMENT</b>	
	restraint systems (SRS) by manufacturer/ component supplier specifications.
<b>Testing equipment</b>	Testing equipment is to include pressure gauges, charge stations, reclaim units, recycling units, leak detectors, thermometers, flushing equipment, multimeters, data scanners, test lights and test LEDs, and may include lab oscilloscopes and manufacturer/component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to climate control systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to climate control system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURETB3001 Repair electric braking systems

### Modification History

Release	Comment
Release 1	Replaces AURE311666A Repair electric braking systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to repair electric braking systems and associated components as fitted to vans and trailers.</p> <p>This unit of competency also applies to electric braking controllers fitted to vehicles and plant and equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing of systems and identification of faults/causes, the repair and retesting of systems and associated electric braking system components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method, processes and equipment 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal safety needs, are observed throughout the work 1.4. Equipment and tooling are identified and checked for safe and effective operation 1.5. Procedures are determined to minimise task time
2. Test systems/ components and identify faults	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Tests are carried out to determine faults using tooling and techniques 2.3. Tests are completed without causing damage to any component or system 2.4. Faults are identified and preferred repair action determined 2.5. Tests are carried out according to industry regulations/ guidelines, WHS legislation, statutory legislation and enterprise procedures/policies
3. Repair electric braking systems and/or associated components	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Necessary repairs, component replacement and adjustments are carried out using tooling, techniques and materials 3.3. Electric braking system and/or associated component repair is completed without causing damage to any component or system 3.4. Retests are carried out to ensure correct and safe electric braking system service operation 3.5. Repairs/removal, replacement and adjustments are carried out according to industry regulations/guidelines WHS legislation, statutory legislation and enterprise/procedures policies 3.6. Workplace and equipment records are completed in accordance with workplace requirements
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored 4.2. Waste and scrap is removed following workplace procedures 4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures

ELEMENT	PERFORMANCE CRITERIA
	<p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements</p> <p>4.5. Maintenance is completed in accordance with manufacturer/component supplier specifications and workplace procedures</p> <p>4.6. Tooling and equipment is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for testing and repairing of electric braking systems
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of work site and the obtaining of equipment and materials to avoid any backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to the repair of electrical braking systems, including the use of specialist tooling and measuring equipment, computerised technology, communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operating principles of electric braking systems
- construction and operation of electric braking systems/components relevant to application
- types and layout of service/repair manuals (hard copy and electronic)
- pre-repair testing and fault identification procedures
- repair, removal, replacement and adjustment procedures
- post-repair testing procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing a range of electric braking systems
- identifying faults and determining repair requirements
- repairing a range of electric braking systems to workplace and manufacturer/component supplier requirements
- retesting electric braking systems prior to returning to service
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated automotive site.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the repair of electric braking systems
- equipment, hand and power tooling appropriate to the repair of electric braking systems
- activities covering the mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry RS&R Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

**EVIDENCE GUIDE**

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and must reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electric braking systems</b>	Electric braking systems may be in light vehicles and plant and equipment fitted with electric van/trailer braking controllers or trailers fitted with electric brakes
<b>Repair methods</b>	Repair methods are to include: <ul style="list-style-type: none"> <li>• visual, aural and functional assessment (including damage and corrosion)</li> <li>• testing under operating conditions</li> <li>• electrical/electronic testing</li> <li>• removal, dismantling, reassembly and refitting</li> <li>• repair and/or replacement of system components</li> <li>• road testing/retesting prior to placing back into service</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and procedures
<b>Safe operating procedures</b>	Safe operating procedures may include, but are not limited to: <ul style="list-style-type: none"> <li>• the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian Standards, company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State and local authorities administering the applicable acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>hand tooling, vehicle lifting equipment and testing equipment, including multimeters, power tooling, air tooling, specialist tooling for removal/adjustment and brake decelerometer</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>spare parts, lubricants, fluids and cleaning materials</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>safe work procedures related to the repair of electric braking systems</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> <li>instructions issued by authorised enterprise or external personnel</li> <li>Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Brakes
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## AURETB5002 Analyse and evaluate electrical and electronic faults in braking systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT575493A Analyse and evaluate electrical and electronic faults in braking systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic faults in braking systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning electrical and electronic braking systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Electrical and electronic braking system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary electrical and electronic braking systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

##### Underpinning knowledge

- basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the types, functions and operations of braking systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within light vehicle, mobile plant, heavy vehicle, transmission/driveline systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance, discrete electronic components, logic families and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
findings and recommendations. <ul style="list-style-type: none"><li>• general knowledge of personal computer operation.</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three different braking systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different braking systems.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, operational electrical and electronic braking systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to

<b>EVIDENCE GUIDE</b>	
	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Braking systems</b>	Braking systems to be covered here are to include ABS, engine brakes, electric retarders, electric trailer brakes, brake by wire and multi-class bus systems.
<b>Braking systems electrical and electronic failures</b>	Braking systems electrical and electronic failures covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Braking systems failures</b>	Braking systems failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards and are to include the disarming of supplementary restraint systems (SRS) by manufacturer/ component supplier specifications.

**RANGE STATEMENT**

<b>Testing equipment</b>	Testing equipment is to include analogue and digital multimeters, lab oscilloscopes, data scanners, test lights and test LEDs, and may include pulse generators and manufacturer/component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to braking systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to braking system technology and technology changes.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Brakes
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## AURETD3001 Service and repair electronically controlled steering systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURE320871A Service and repair electronically controlled steering systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to locate and rectify faults in electronically controlled steering systems. It applies specifically to electrical/electronic control systems and components and does not cover systems which are electronically controlled and operated.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, servicing and adjustment of systems, repair of faults, retesting of systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including quality, material, equipment quantities and service manuals 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal protection needs, are observed throughout the work 1.4. Electronic system protection devices, processes and precautions are identified appropriate to the application 1.5. Equipment and tooling are identified and checked for safety and correct operation 1.6. Procedures are identified to minimise task time
2. Service and adjust electronically controlled steering systems	2.1. Service information is accessed and interpreted prior to commencing servicing procedures 2.2. Current status and previous fault history of electronic steering/suspension system is determined in conjunction with the customer 2.3. Current status of the electronic system is confirmed through a road test program 2.4. Electronic system is serviced in accordance with manufacturer/component supplier specifications and enterprise procedures 2.5. Fluids and lubricants are used in accordance with WHS and manufacturer/component supplier specifications 2.6. Used fluids and lubricants are disposed of according to enterprise and WHS requirements
3. Rectify identified electronically controlled steering system faults	3.1. Road test results are interpreted to verify system fault diagnosis 3.2. Customer is notified of identified fault(s) and agreement is given before work is carried out 3.3. Faulty components are removed and refitted with approved replacement parts in accordance with workplace procedures and customer requirements 3.4. Faulty components are disposed of in accordance with workplace procedures and warranty requirements 3.5. System adjustments are completed for components replaced
4. Test and confirm system faults have been rectified	4.1. Test procedures are carried out to confirm rectification of system faults 4.2. Documentation is completed in accordance with workplace/customer requirements

ELEMENT	PERFORMANCE CRITERIA
	4.3.Outcomes of rectification work is explained to the satisfaction of the customer to enable invoicing documentation to be completed
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored</p> <p>5.2.Waste and scrap is removed following workplace procedures</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures</p> <p>5.4.Serviceable equipment is tagged and faults identified in accordance with workplace procedures</p> <p>5.5.Maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</p> <p>5.6.Tooling is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for circuit and component testing, and major repairs/component replacement
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information on electrical circuit/component testing, servicing and replacement procedures
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete tests and measurements to determine electrical circuit/component major repair/replacement requirements
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform electrical testing, and repair/replacement procedures
- problem-solving skills for a range of procedural issues
- use workplace technology related to the service and repair of electronically controlled steering systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, materials and personal safety requirements
- operating principles of electronically controlled steering systems
- construction and operation of electronically controlled steering systems
- relationship to other electronically controlled systems, including shared components (e.g. ECU, sensors) test, diagnosis and fault determination procedures
- types and layout of service/repair manuals (hard copy and electronic)
- service/repair, removal, replacement and adjustment procedures
- post-repair test procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- servicing and adjusting electronic controls of steering systems to manufacturer/component supplier requirements
- determining the repair/replacement requirements to rectify faults
- repairing/rectifying faults in electronic controls of steering systems to manufacturer/component supplier requirements
- testing, inspecting and evaluating steering system/components to manufacturer/component supplier requirements
- completing workplace and equipment documents.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and repair of electronically controlled steering systems
- equipment, hand and power tooling appropriate to the service and repair of electronically controlled steering systems
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines

**EVIDENCE GUIDE**

	<p>of AUR12 Automotive Industry RS&amp;R Training Package</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li><li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</li><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electronically controlled steering systems</b>	Electronically controlled steering systems include: <ul style="list-style-type: none"> <li>• electronic control systems in two/four wheel steering systems and fitted to light vehicles and/or heavy commercial vehicles</li> </ul>
<b>Faults</b>	Faults in control systems may include: <ul style="list-style-type: none"> <li>• component malfunction, system adjustment, open, short and grounded circuits</li> </ul>
<b>Service and repair methods</b>	Service and repair methods are to include: <ul style="list-style-type: none"> <li>• diagnosis and determining faults</li> <li>• pre- and post-service/repair testing of system and component operation</li> <li>• service and repair/replacement of system components</li> <li>• service and repair adjustments</li> <li>• removal, dismantling, reassembly and refitting</li> <li>• testing system operations</li> <li>• retrieval and assessment of electronic systems data, including fault codes</li> </ul>
<b>Critical precautions</b>	Critical precautions include: <ul style="list-style-type: none"> <li>• manufacturer/component supplier procedures which must be applied as poor working practices are likely to damage electronic system ECUs and/or other components</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but may not be limited to:</p> <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering the acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>hand tooling, testing equipment, including multimeters, power tooling, air tooling, specialist tooling for removal/adjustment, specialised system testers, oscilloscopes, scan tooling and LED test lights</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>spare parts, lubricants and fluids and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>safe work procedures related to the service and repair of electronically controlled steering systems</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURETD5002 Analyse and evaluate electrical and electronic faults in stability, steering and suspension systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT575093A Analyse and evaluate electrical and electronic faults in stability/steering/suspension systems</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic stability/steering/suspension systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning electrical and electronic stability/steering/suspension systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/ component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Electrical and electronic stability/steering/suspension system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/ component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary electrical and electronic stability/steering/suspension systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the types, functions and operations of stability, steering and suspension systems.
- general knowledge of the types, functions and operations of engine management systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within light vehicle, mobile plant, and/or light marine engine management systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetics, inductance, discrete electronic components, logic families and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li><li>• general knowledge of personal computer operation.</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three different stability, steering and suspension systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different stability, steering and suspension systems.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, electrical and electronic stability/steering/suspension systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to

<b>EVIDENCE GUIDE</b>	
	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Systems</b>	Systems are to include traction, stability, steering and suspension systems across the range of vehicle types. Coverage is to include electronic stability systems, vehicle dynamic control, closed loop electronic steering and multi-class bus systems.
<b>Electrical and electronic failures in stability/steering/suspension system</b>	Electrical and electronic failures in stability/steering/ suspension system covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Stability/steering and suspension system failures</b>	Stability/steering and suspension system failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	<ul style="list-style-type: none"> <li>Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.</li> </ul>
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards and are to include the disarming of supplementary restraint systems (SRS) by manufacturer/ component supplier

<b>RANGE STATEMENT</b>	
	specifications.
<b>Testing equipment</b>	Testing equipment is to include analogue and digital multimeters, lab oscilloscopes, data scanners and test lights, test LEDs and pulse generators, and may include other manufacturer/component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operator and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to stability/steering and suspension systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURETE5001 Analyse and evaluate electrical and electronic faults in engine management systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT575293A Analyse and evaluate electrical and electronic faults in engine management systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic faults in engine management systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning engine management systems are accessed and interpreted.</p> <p>1.3. National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks.</p> <p>1.4. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.5. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.6. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Engine management system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary tracked, undercarriage and suspension systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the types, functions and operations of diesel, petrol, lpg and cng engine system operation.
- general knowledge of the types, functions and operations of engine management systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within light vehicle, mobile plant, and/or light marine engine management systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetics, inductance, discrete electronic components, logic families, and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li><li>• national environment protection measures for diesel vehicles as applicable to tasks.</li><li>• general knowledge of personal computer operation.</li></ul>

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three different engine management systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different engine management systems.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, engine management systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<b>Method of assessment</b>	<p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to</p>

<b>EVIDENCE GUIDE</b>	
	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Engine management systems</b>	Engine management systems are characterised as those using a digital computer to manage fuel, ignition, engine speed, performance and engine emissions and also other optional equipment systems.
<b>Coverage</b>	Coverage is to include fuel cell technology/hydrogen, on-line maintenance and remote diagnostics, common rail diesel direct injection, drive by wire, multi-class bus systems and closed loop diesel engine management systems.
<b>Electrical and electronic failures in engine management systems</b>	Electrical and electronic failures in engine management systems covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Engine management system failures</b>	Engine management system failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with National Environment Protection Measures for Diesel Vehicles as applicable to tasks.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards and are to include the disarming of supplementary restraint systems (SRS) by manufacturer/ component supplier specifications.
<b>Testing equipment</b>	Testing equipment is to include four-gas exhaust gas analyser, compression gauge, feeler gauge, engine tune oscilloscope, analogue and digital analogue and digital multimeters, lab oscilloscopes, data scanners, test lights, test LED's, pulse generators, noid lamps, fuel pressure gauges, vacuum gauge and may include dynamometer and manufacturer/component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include engine compression, valve adjustment and timing, exhaust gas analysis, fuel flow, fuel pressure, wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation, and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to engine management systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging engine management system technology and technology changes.</li> <li>• National Environment Protection Measures for Diesel Vehicles as applicable to tasks.</li> </ul>

## Unit Sector(s)

Unit sector	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURETH3001 Depower battery electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH3001 Depower battery electric vehicles (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to depower battery electric vehicles (BEVs). It involves ensuring the vehicle high voltage (HV) supply system is isolated prior to commencing service and repair work.</p> <p>Importance is placed on the application of HV and low voltage (LV) electrical safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the service and repair of HV BEVs in the automotive industry.
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## Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

Element	Performance Criteria
1. Prepare for work	<p>1.1.<i>Procedures and information</i> are sourced and work requirements are confirmed</p> <p>1.2.Service method appropriate for the specific circumstances is selected and prepared for</p>
2. Deactivate power control	<p>2.1.<i>Workplace health and safety (WHS) requirements</i> and other relevant information for deactivation are identified</p> <p>2.2.Procedure to deactivate vehicle at main control is followed to commence depowering process</p>
3. Isolate vehicle power supply	<p>3.1.HV power supply connection is located and isolated according to manufacturer instructions, taking <i>appropriate precautions</i> to prevent electric shock to self and others</p> <p>3.2.LV power supply is located and disconnected according to manufacturer instructions and vehicle and workplace safety procedures</p> <p>3.3.Vehicle is stabilised and checked for residual voltage in system</p> <p>3.4.HV power supply connection is secured and retained to prevent re-fit by third party</p> <p>3.5.HV power supply is identified with warning tag or sign to indicate potential hazards</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to use workplace technology and tools to:
  - deactivate BEVs
  - locate and disconnect LV power supply in BEVs
  - locate, isolate and stabilise HV power supply in BEVs
- communication skills to:
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - confirm work requirements and specifications
- literacy skills to interpret technical information and specifications
- self-management skills to:
  - manage risks and hazards associated with HV, BEV electrical systems
  - manage workflow and productivity

### Required knowledge

- WHS requirements, including:
  - safe work practices
  - electrical safety relevant to BEVs
- general principles of operation of HV and LV electrical systems relevant to BEVs
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice relevant to working on BEVs
- workplace policies procedures including quality, reporting and recording procedures relevant to working on BEVs

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• safely deactivate the vehicle and isolate HV and LV power supply</li> <li>• ensure the vehicle is depowered, stabilised and no residual HV power exists.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice</li> </ul> <p>Competency is to be assessed using a BEV that uses HV and LV alternating and direct current (AC/DC) electrical systems. Where simulation is used, an operational BEV must be included in the simulation.</p> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• a BEV</li> <li>• manufacturer specifications for the BEV</li> </ul>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"><li>• testing equipment</li><li>• full range of essential tools and equipment</li><li>• workplace documentation.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the performance criteria is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Procedures and information*** may include:

- Australian standards
- diagrams and sketches
- engineer and manufacturer design specifications and instructions
- industry codes of practice
- manufacturer specifications
- material safety data sheets (MSDS)
- parts catalogues
- verbal, written and graphical instructions issued by authorised internal and external persons
- workplace recording and reporting procedures
- workplace specifications and requirements
- workshop manuals.

***WHS requirements*** may include:

- eliminating of hazardous materials and substances
- first aid equipment
- following emergency procedures
- hazard and risk control
- personal protective equipment (PPE), such as:
  - electrical safety gloves 1000V
  - HV insulating mats (Australian standards rated)
- safety equipment
- techniques for manual handling, including shifting, lifting and carrying.

***Appropriate precautions*** may include:

- analysing task to define risk
- applying electrical safety precautions, such as:
  - “one hand rule”
  - live system warning tags and signs
- depowering the vehicle
- following identified OHS requirements
- isolating the HV battery electrical supply
- stabilising the electrical system.

## Unit Sector(s)

Competency field	Electrical
Sector	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH3002 Service and maintain battery electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH3002 Service and maintain battery electric vehicles (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to service and maintain battery electric vehicles (BEVs). It involves working with automotive electrical components, maintaining batteries, and basic testing of electric motors.</p> <p>Importance is placed on the application of high voltage (HV) and low voltage (LV) electrical safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the service and maintenance of BEVs in the automotive industry.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Prerequisite units	AURETH3001 Depower battery electric vehicles
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## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service operations	<p>1.1.<b>Information and documents</b> are sourced</p> <p>1.2.<b>Workplace health and safety (WHS) requirements</b> and other <b>appropriate precautions</b> are identified and followed</p> <p>1.3.Service method appropriate for the specific circumstances is selected and prepared for</p> <p>1.4.Tools and testing equipment necessary to conduct the work are assembled</p> <p>1.5.Technical and/or calibration requirements for servicing the BEV are established</p>
2. Test the battery systems	<p>2.1.<b>Tests and checks</b> for electrical efficiency are carried out on battery system using manufacturer specifications and test procedures</p> <p>2.2.Battery fixture and connections are checked to ensure they are secure</p> <p>2.3.Faults with the battery systems are identified and appropriate <b>corrective action</b> is taken</p> <p>2.4.Faults and corrective action are recorded</p>
3. Check the electrical motor	<p>3.1.<b>Electrical motor checks</b> are carried out to confirm condition and efficiency</p> <p>3.2.Problems associated with the performance of the electrical motor are identified</p> <p>3.3.Corrective action required to achieve an optimum motor performance is implemented</p> <p>3.4.Faults and corrective action are recorded</p>
4. Check associated electrical components	<p>4.1.Checks are conducted on the condition and operation of associated electrical components</p> <p>4.2.Problems with the performance of electrical components are identified and corrective action is taken</p> <p>4.3.Faults with associated electrical components are identified and appropriate corrective action is taken</p> <p>4.4.Faults and corrective action are recorded</p>
5. Complete service operations	<p>5.1.Work area is tidied, and tools and equipment are replaced according to <b>workplace requirements</b></p> <p>5.2.Job card or repair order is completed according to workplace requirements</p> <p>5.3.Client report on the outcomes of the service and</p>

ELEMENT	PERFORMANCE CRITERIA
	repair is prepared according to workplace requirements 5.4. Vehicle is prepared for return to the client

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to the service and maintenance of BEVs
  - use specialist tools and equipment
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with HV BEV electrical systems and components
  - optimise workflow and productivity

### Required knowledge

- battery theory, including:
  - battery internal resistance
  - battery types
  - terminal corrosion
  - terminal resistance
- battery pack theory, including:
  - cell failure theory
  - charging characteristics
  - open circuit cells
  - reverse polarisation
  - series cell configuration
  - strapping and layout
- battery charger characteristics and operation
- battery management system (BMS) theory
- components of BEVs and their functions
- WHS requirements relating to:
  - electrical safety

- safe work practices
- power distribution unit (PDU) operation
- principles of electricity, including:
  - alternating current (AC)
  - direct current (DC)
- applicable commonwealth, state or territory legislation, regulations, standards, codes of practice and environmental regulations relating to the service and maintenance of BEVs
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to the service and maintenance of BEVs

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of components and system is maintained when performing tests</li> <li>• test battery performance and correct deficiencies</li> <li>• check electric motor performance and correct deficiencies</li> <li>• check associated electrical components and correct deficiencies</li> <li>• complete relevant documentation for the service of the BEV.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using a BEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational BEV must be included in the simulation.</p>

<b>Evidence Guide</b>	
	<p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"><li>• appropriate PPE</li><li>• a BEV</li><li>• manufacturer specifications for the BEV</li><li>• testing equipment</li><li>• full range of essential tools and equipment</li><li>• workplace documentation.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the performance criteria is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Information and documents</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• diagrams and sketches</li> <li>• engineer and manufacturer design specifications and instructions</li> <li>• industry codes of practice</li> <li>• parts catalogues</li> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• workplace specifications and requirements</li> <li>• workshop manuals.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• elimination of hazardous materials and substances</li> <li>• first aid equipment</li> <li>• following emergency procedures</li> <li>• hazard and risk control</li> <li>• material safety data sheets (MSDS)</li> <li>• personal protective equipment (PPE) and clothing</li> <li>• safety equipment</li> <li>• techniques for manual handling, including shifting, lifting and carrying.</li> </ul>
<b>Appropriate precautions</b> may include:	<ul style="list-style-type: none"> <li>• analysing tasks to define risk</li> <li>• applying electrical safety precautions, such as:             <ul style="list-style-type: none"> <li>• “one hand rule”</li> <li>• live system warning tags or signs</li> </ul> </li> <li>• depowering the vehicle</li> <li>• isolating the HV battery supply</li> <li>• using PPE, such as:             <ul style="list-style-type: none"> <li>• electrical safety gloves 1000V</li> <li>• HV insulating mats (Australian standards rated).</li> </ul> </li> </ul>
<b>Tests and checks</b> may include:	<ul style="list-style-type: none"> <li>• battery charging interlock</li> <li>• battery cooling system</li> <li>• BMS</li> <li>• inertia safety cut-out switch</li> </ul>

Range Statement	
	<ul style="list-style-type: none"><li>• isolation/cut-off emergency device</li><li>• leakage of electrolyte</li><li>• mounting of batteries</li><li>• on-board battery charging system</li><li>• PDU.</li></ul>
<b>Corrective action</b> may include:	<ul style="list-style-type: none"><li>• tightening connections</li><li>• balancing state of charge</li><li>• replacing cable connections</li><li>• removing and replacing components.</li></ul>
<b>Electrical motor checks</b> may include:	<ul style="list-style-type: none"><li>• connecting scanner or computer interface to check motor operation</li><li>• integrity of mountings.</li></ul>
<b>Workplace requirements</b> may include:	<ul style="list-style-type: none"><li>• industry codes of practice</li><li>• manufacturer specifications</li><li>• quality policies and procedures</li><li>• safe work procedures</li><li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li><li>• workplace recording and reporting procedures.</li></ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Sector</b>	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4003 Test and repair high voltage battery systems in battery electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4003 Test and repair high voltage battery systems in battery electric vehicles (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to test and repair high voltage (HV) battery systems in battery electric vehicles (BEVs). It involves working with HV and low voltage (LV) alternating current (AC) and direct current (DC) automotive battery systems and electrical components.</p> <p>Importance is placed on the application of HV electrical safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work involves testing and repairing HV battery systems in BEVs in the automotive industry.
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### Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Prerequisite units	AURETH3001 Depower battery electric vehicles AURETR3025 Test, charge and replace batteries
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## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for repair operations	1.1.HV battery <i>repair information</i> is accessed 1.2. <i>Workplace health and safety (WHS) requirements</i> and <i>appropriate precautions</i> are identified and applied 1.3.Repair method most appropriate for the specific circumstances is selected and prepared for 1.4.Tools and <i>testing equipment</i> necessary to conduct the work are assembled 1.5.Technical and/or calibration requirements for repair of the HV battery system are established
2. Test battery system	2.1.HV battery systems is tested for <i>electrical efficiency</i> using manufacturer specifications and <i>test procedures</i> 2.2.Diagnostic equipment is used to retrieve system parameters and information 2.3.Faults with the battery system are identified 2.4.Test results are recorded
3. Repair battery system	3.1.Test results are compared with equipment specifications to decide on <i>appropriate corrective action</i> 3.2.HV battery system components are replaced, repaired or adjusted as required 3.3.Repaired HV battery systems are re-tested for correct operation 3.4.Replacement, repair or adjustment procedures are recorded
4. Complete repair operations	4.1.Work area is tidied, and tools and equipment are replaced according to <i>workplace requirements</i> 4.2.Job card or repair order is completed according to workplace requirements 4.3.Client report is prepared on the outcomes of the repair of the HV battery system, according to workplace requirements 4.4.Vehicle is prepared for return to the client

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to testing and repairing BEV HV battery systems and components
  - use specialist tools and equipment
  - use computerised measuring equipment
  - report and record actions
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with HV BEV battery systems and components
  - optimise workflow and productivity

### Required knowledge

- components of HV battery systems and their functions
- battery management system (BMS) theory
- battery theory, including:
  - battery internal resistance
  - battery types
  - terminal corrosion
  - terminal resistance
- battery pack theory, including:
  - cell failure theory
  - charging characteristics
  - open circuit cells
  - reverse polarisation
  - series cell configuration

- strapping and layout
- HV battery charger and DC to DC converter characteristics
- WHS requirements relating to:
  - safe work practices
  - electrical safety
- power distribution unit (PDU) theory
- principles of electricity, including AC and DC
- principles of operation of HV battery systems
- applicable commonwealth, state or territory legislation, regulations, standards, codes of practice and environmental regulations relating to the repair of HV battery systems
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to the repair of HV BEV battery systems

## Evidence Guide

Evidence Guide	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of any component or system is maintained when performing tests</li> <li>• check HV battery system performance against manufacturer's specifications</li> <li>• replace, repair and adjust HV battery system components as required to correct deficiencies</li> <li>• complete relevant documentation for the repair of the HV battery system.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using a BEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational BEV must be included in the simulation.</p> <p>The following resources must be made available for the</p>

<b>Evidence Guide</b>	
	<p>assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• a BEV</li> <li>• manufacturer specifications for the BEV</li> <li>• testing equipment</li> <li>• full range of essential tools and equipment</li> <li>• workplace documentation.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of an holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Repair information*** may include:

- Australian standards
- diagrams and sketches
- engineer or manufacturer design specifications and instructions
- industry codes of practice
- parts catalogues
- verbal, written and graphical instructions issued by authorised internal and external persons
- workplace specifications and requirements.

***WHS requirements*** may include:

- elimination of hazardous materials and substances
- first aid equipment
- following emergency procedures
- hazard and risk control
- material safety data sheets (MSDS)
- personal protective equipment (PPE) and clothing
- safety equipment
- techniques for manual handling, including shifting, lifting and carrying.

***Appropriate precautions*** may include:

- analysing task to define risk
- applying electrical safety precautions, such as:
  - “one hand rule”
  - live system warning tags and signs
- isolating the HV battery supply
- depowering the vehicle
- using PPE, such as:
  - electrical safety gloves 1000V
  - HV insulating mats (Australian standards rated).

***Testing equipment*** may include:

- AC/DC current clamp
- BMS diagnostic equipment
- diagnostic scanner
- insulation or mega ohm tester

Range Statement	
	<ul style="list-style-type: none"> <li>• multimeter CAT 3 1000V</li> <li>• oscilloscope</li> <li>• thermal imaging equipment or non-contact thermometer.</li> </ul>
<i>Electrical efficiency</i> relates to:	<ul style="list-style-type: none"> <li>• charging</li> <li>• discharge rate</li> <li>• holding capacity</li> <li>• temperature</li> <li>• voltage.</li> </ul>
<i>Test procedures</i> may include:	<ul style="list-style-type: none"> <li>• battery charging interlock</li> <li>• battery cooling system</li> <li>• BMS</li> <li>• HV contactors</li> <li>• HV current leakage to vehicle chassis</li> <li>• HV fuse</li> <li>• inertia safety cut-out switch</li> <li>• isolation/cut-off emergency device</li> <li>• leakage of electrolyte</li> <li>• loose cable connections</li> <li>• mounting of batteries</li> <li>• on-board battery charging system</li> <li>• PDU.</li> </ul>
<i>Appropriate corrective action</i> may include:	<ul style="list-style-type: none"> <li>• balancing state of charge</li> <li>• replacing cable connection</li> <li>• replacing system component</li> <li>• replacing the battery</li> <li>• tightening connection.</li> </ul>
<i>Workplace requirements</i> may include:	<ul style="list-style-type: none"> <li>• industry codes of practice</li> <li>• manufacturer specifications</li> <li>• quality policies and procedures</li> <li>• safe work procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• workplace recording and reporting procedures.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Sector	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4004 Diagnose and repair traction motor speed control device in battery electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4004 Diagnose and repair traction motor speed control device in battery electric vehicles (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to repair the traction motor speed control device in battery electric vehicles (BEVs), which may be called a digital motor controller (DMoC) or motor control unit (MCU) in some vehicles. It involves working with high voltage (HV) and low voltage (LV) alternating current (AC) and direct current (DC) automotive electrical components.</p> <p>Importance is placed on the application of HV safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the diagnosis and repair of the traction motor speed control device in BEVs in the automotive industry.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Prerequisite units	AURETH3001 Depower battery electric vehicles
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## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for repair operations	<p>1.1. <b>Procedures and information</b> relevant to the task are sourced and work requirements confirmed</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> and <b>appropriate precautions</b> are identified and applied</p> <p>1.3. Method most appropriate for the specific circumstances is selected and prepared for</p> <p>1.4. Tools and testing equipment necessary to conduct the work are assembled</p> <p>1.5. Technical and/or calibration requirements for testing and repair of the traction motor system are established</p>
2. Diagnose motor control device	<p>2.1. <b>Tests and checks</b> on motor controller cooling system are carried out using manufacturer specifications and test procedures</p> <p>2.2. Motor controller is disconnected using correct procedure</p> <p>2.3. Exposed live HV and LV connections and wiring are labelled with appropriate warning tags or signs</p> <p>2.4. Controller settings and diagnostic information are retrieved using appropriate equipment</p> <p>2.5. Tests and checks on motor controller are carried out to ensure correct operation</p> <p>2.6. Test results are recorded</p>
3. Repair or replace motor controller	<p>3.1. Motor controller test results are compared with manufacturer specifications to decide on <b>appropriate corrective action</b></p> <p>3.2. Motor controller is repaired or replaced as required</p> <p>3.3. Repaired or replacement motor controller is re-tested for correct operation</p> <p>3.4. Motor controller is reconnected using correct procedure</p> <p>3.5. Replacement or repairs carried out are recorded</p>
4. Complete repair operations	<p>4.1. Work area is tidied, and tools and equipment replaced according to <b>workplace requirements</b></p> <p>4.2. Job card is completed according to workplace requirements</p> <p>4.3. Client report is prepared on the outcomes of the service and repair of the motor controller</p>

ELEMENT	PERFORMANCE CRITERIA
	according to workplace requirements 4.4. Vehicle is prepared for return to the client

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to testing and repairing a BEV traction motor speed control device
  - use specialist tools and equipment
  - use computerised measuring and diagnostic equipment
  - report and record actions
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with HV BEV electrical systems and components
  - optimise workflow and productivity

### Required knowledge

- components of HV BEVs and their functions
- WHS requirements relating to:
  - safe work practices
  - electrical safety
- principles of electricity, including AC and DC
- principles of operation of motor speed control devices
- repair procedures for motor speed control devices
- applicable commonwealth, state or territory legislation, regulations, standards, codes of practice and environmental regulations relating to testing and repairing HV BEV motor speed control devices
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to testing and repairing HV BEV motor speed control devices

## Evidence Guide

Evidence Guide	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of components and system is maintained when performing tests</li> <li>• check the motor control device performance against manufacturer specifications</li> <li>• diagnose and repair or replace motor control device as required to correct deficiencies</li> <li>• complete relevant documentation for the testing and repair of the motor control device.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using a BEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational BEV must be included in the simulation.</p> <p>The following resources must be made available for the</p>

<b>Evidence Guide</b>	
	<p>assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• a BEV</li> <li>• manufacturer specifications for the BEV</li> <li>• testing equipment</li> <li>• full range of essential tools and equipment</li> <li>• workplace documentation.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• diagrams and sketches</li> <li>• engineer or manufacturer design specifications and instructions</li> <li>• industry codes of practice</li> <li>• parts catalogues</li> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• workplace specifications and requirements.</li> </ul>
<b><i>WHS requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• elimination of hazardous materials and substances</li> <li>• first aid equipment</li> <li>• following emergency procedures</li> <li>• hazard and risk control</li> <li>• material safety data sheets (MSDS)</li> <li>• personal protective equipment (PPE) and clothing</li> <li>• safety equipment</li> <li>• techniques for manual handling, including shifting, lifting and carrying.</li> </ul>
<b><i>Appropriate precautions</i></b> may include:	<ul style="list-style-type: none"> <li>• analysing task to define risk</li> <li>• applying electrical safety precautions, such as: <ul style="list-style-type: none"> <li>• “one hand rule”</li> <li>• live system warning tags or signs</li> </ul> </li> <li>• isolating the HV battery electrical supply</li> <li>• depowering the vehicle</li> <li>• using PPE, such as: <ul style="list-style-type: none"> <li>• electrical safety gloves 1000V</li> <li>• HV insulating mats (Australian standards rated).</li> </ul> </li> </ul>
<b><i>Tests and checks</i></b> may include:	<ul style="list-style-type: none"> <li>• computer interface or communication device to retrieve controller settings and diagnostic information</li> <li>• controller input/output signals and voltages</li> <li>• motor controller cooling system.</li> </ul>
<b><i>Appropriate corrective</i></b>	<ul style="list-style-type: none"> <li>• repairing the motor controller</li> </ul>

Range Statement	
<b><i>action</i></b> may include:	<ul style="list-style-type: none"><li>• replacing the motor controller.</li></ul>
<b><i>Workplace requirements</i></b> may include:	<ul style="list-style-type: none"><li>• industry codes of practice</li><li>• manufacturer specifications</li><li>• quality policies and procedures</li><li>• safe work procedures</li><li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li><li>• workplace recording and reporting procedures.</li></ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Sector</b>	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4005 Diagnose and repair high voltage traction motors in battery electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4005 Diagnose and repair high voltage traction motors in battery electric vehicles (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair high voltage (HV) traction motors in battery electric vehicles (BEVs).</p> <p>Importance is placed on the application of HV safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the diagnosis and repair of HV traction motors in BEVs in the automotive industry.</p> <p>It involves working with HV alternating current (AC) and direct current (DC) automotive electrical components.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Prerequisite units	AURETH3001 Depower battery electric vehicles
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## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for repair operations	<p>1.1. <b>Procedures and information</b> relevant to the task are sourced and work requirements confirmed</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> and <b>appropriate precautions</b> are identified and applied</p> <p>1.3. Repair methods for the specific work requirement are selected and prepared for</p> <p>1.4. Tools and testing equipment necessary to conduct the work are assembled</p> <p>1.5. Technical and/or calibration requirements for diagnosis and repair of the traction motor are established</p>
2. Diagnose traction motor operation	<p>2.1. Traction motor operational <b>tests and checks</b> are carried out using manufacturer specifications and test procedures</p> <p>2.2. Faults with the traction motor are diagnosed and identified</p> <p>2.3. Test results are recorded</p>
3. Repair traction motor	<p>3.1. Traction motor repair information is accessed</p> <p>3.2. Test results are compared with manufacturer specifications to decide on <b>corrective actions</b></p> <p>3.3. Traction motor and components are removed, replaced, repaired and adjusted as required</p> <p>3.4. Traction motor is re-tested for correct operation once repaired</p> <p>3.5. Replacement, repair or adjustment procedures are recorded</p>
4. Complete repair operations	<p>4.1. Work area is tidied, and tools and equipment replaced according to <b>workplace requirements</b></p> <p>4.2. Job card or repair order is completed according to workplace requirements</p> <p>4.3. Client report is prepared on the outcomes of the diagnosis and repair of the traction motor according to workplace requirements</p> <p>4.4. Vehicle is prepared for return to the client</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to the repair of BEV traction motors and components
  - use specialist tools and equipment
  - use computerised measuring and diagnostic equipment
  - report and record actions
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with HV BEV electrical systems and components
  - optimise workflow and productivity

### Required knowledge

- components of HV BEVs and their functions
- principles of electricity, including AC and DC
- principles of operation of traction motors
- relevant WHS requirements relating to:
  - safe work practices
  - electrical safety
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice and environmental regulations relating to the diagnosis and repair of BEV traction motors
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to the diagnosis and repair of BEV traction motors

## Evidence Guide

Evidence Guide	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of components and system is maintained when performing tests</li> <li>• check traction motor performance against manufacturer specifications</li> <li>• diagnose and replace, repair or adjust traction motor as required to correct deficiencies</li> <li>• complete relevant documentation for the diagnosis and repair of the traction motor.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using a BEV that uses HV and low voltage (LV) AC/DC electrical systems. Where simulation is used, an operational BEV must be included in the simulation.</p>

<b>Evidence Guide</b>	
	<p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• a BEV</li> <li>• manufacturer specifications for the BEV</li> <li>• testing equipment</li> <li>• full range of essential tools and equipment</li> <li>• workplace documentation.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Procedures and information</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• diagrams and sketches</li> <li>• engineer or manufacturer design specifications and instructions</li> <li>• industry codes of practice</li> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• workplace specifications and requirements.</li> </ul>
<p><b><i>WHS requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• elimination of hazardous materials and substances</li> <li>• first aid equipment</li> <li>• following emergency procedures</li> <li>• hazard and risk control</li> <li>• material safety data sheets (MSDS)</li> <li>• personal protective equipment (PPE) and clothing</li> <li>• safety equipment</li> <li>• techniques for manual handling, including shifting, lifting and carrying.</li> </ul>
<p><b><i>Appropriate precautions</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• analysing task to define risk</li> <li>• applying electrical safety precautions, such as: <ul style="list-style-type: none"> <li>• “one hand rule”</li> <li>• live system warning tags or signs</li> </ul> </li> <li>• isolating the HV battery electrical supply</li> <li>• depowering the vehicle</li> <li>• using PPE, such as: <ul style="list-style-type: none"> <li>• electrical safety gloves 1000V</li> <li>• HV insulating mats (Australian standards rated).</li> </ul> </li> </ul>
<p><b><i>Tests and checks</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• damage to traction motor windings</li> <li>• insulation resistance of traction motor windings</li> <li>• routing and damage of HV cabling</li> <li>• traction motor operation.</li> </ul>
<p><b><i>Corrective actions</i></b> may</p>	<ul style="list-style-type: none"> <li>• replacing cable connections</li> </ul>

Range Statement	
include:	<ul style="list-style-type: none"><li>• replacing system components</li><li>• replacing the traction motor</li><li>• tightening connections.</li></ul>
<i>Workplace requirements</i> may include:	<ul style="list-style-type: none"><li>• industry codes of practice</li><li>• manufacturer specifications</li><li>• quality policies and procedures</li><li>• safe work procedures</li><li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li><li>• workplace recording and reporting procedures.</li></ul>

## Unit Sector(s)

Competency field	Electrical
Sector	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4006 Diagnose and repair auxiliary motors and associated components in battery electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4006 Diagnose and repair auxiliary motors and associated components in battery electric vehicles (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair auxiliary motors and associated components in battery electric vehicles (BEVs). It involves working with high voltage (HV) and low voltage (LV) alternating current (AC) and direct current (DC) automotive electrical components and battery systems.</p> <p>Importance is placed on the application of HV safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to diagnosing and repairing the motor controller, and checking the operation of related auxiliary units in the automotive industry.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Prerequisite units	AURETH3001 Depower battery electric vehicles
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## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for repair operations	<p>1.1.<i>Procedures and information</i> relevant to the task are sourced and work requirements confirmed</p> <p>1.2.<i>Workplace health and safety (WHS) requirements</i> and other relevant information for taking <i>appropriate precautions</i> are identified</p> <p>1.3.Repair methods for the specific work requirement are selected and prepared for</p> <p>1.4.Tools and <i>testing equipment</i> necessary to conduct the work are assembled</p> <p>1.5.Technical and/or calibration requirements for diagnosis and repair of the auxiliary motor are established</p>
2. Diagnose auxiliary motor and components operation	<p>2.1.<i>Tests and checks</i> are carried out on auxiliary motor according to manufacturer instructions</p> <p>2.2.Faults with the auxiliary motor/component are located and diagnosed</p> <p>2.3.Auxiliary motor/component is removed, tested and checked for correct operation using manufacturer specifications and test procedures</p> <p>2.4.Test results are recorded</p>
3. Repair auxiliary motor and components	<p>3.1.Auxiliary motor/component repair information is accessed</p> <p>3.2.Test results are compared with manufacturer specifications to decide on <i>corrective actions</i></p> <p>3.3.Auxiliary motor/component is replaced, repaired or adjusted as required</p> <p>3.4.Auxiliary motor/component is re-tested for correct operation once repaired</p> <p>3.5.Replacement, repair or adjustment procedures carried out are recorded</p>
4. Complete service operations	<p>4.1.Work area is tidied, and tools and equipment replaced according to <i>workplace requirements</i></p> <p>4.2.Job card or repair order is completed according to workplace requirements</p> <p>4.3.Client report is prepared on the outcomes of the diagnosis and repair according to workplace requirements</p> <p>4.4.Vehicle is prepared for return to the client</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to the diagnosis and repair of HV auxiliary motors and components in BEVs
  - use specialist tools and equipment
  - use computerised measuring equipment
  - report and record actions
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with BEV electrical systems and components
  - optimise workflow and productivity

### Required knowledge

- components of BEVs and their functions
- WHS requirements relating to:
  - electrical safety
  - safe work practices
  - principles of electricity, including AC and DC
- principles of operation of BEV auxiliary motors and associated components
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice and environmental regulations relating to the diagnosis and repair of BEV auxiliary motors and associated components
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to the diagnosis and repair of BEV auxiliary motors and associated components

## Evidence Guide

### Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- comply with WHS requirements and safe work practices
- maintain electrical and mechanical integrity of the auxiliary motor and components when performing tests
- ensure that auxiliary motor and components performance comply with manufacturer specifications
- diagnose, replace, repair and adjust auxiliary motor and components to correct deficiencies
- complete relevant documentation for the diagnosis and repair of BEV auxiliary motor and associated components.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

Competency is to be assessed using a BEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational BEV must be included in the

Evidence Guide	
	<p>simulation.</p> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"><li>• appropriate PPE</li><li>• a BEV</li><li>• manufacturer specifications for the BEV</li><li>• testing equipment</li><li>• full range of essential tools and equipment</li><li>• workplace documentation.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Procedures and information</i></b> for repair may include:</p>	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• diagrams and sketches</li> <li>• engineer or manufacturer design specifications and instructions</li> <li>• industry codes of practice</li> <li>• material safety data sheets (MSDS)</li> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• workplace instructions and requirements.</li> </ul>
<p><b><i>WHS requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• elimination of hazardous materials and substances</li> <li>• first aid equipment</li> <li>• following emergency procedures</li> <li>• hazard and risk control</li> <li>• personal protective equipment (PPE) and clothing, such as: <ul style="list-style-type: none"> <li>• electrical safety gloves 1000V</li> <li>• HV insulating mats (Australian standards rated)</li> </ul> </li> <li>• safety equipment</li> <li>• techniques for manual handling, including shifting, lifting and carrying.</li> </ul>
<p><b><i>Appropriate precautions</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• analysing task to define risk</li> <li>• applying electrical safety precautions, such as: <ul style="list-style-type: none"> <li>• “one hand rule”</li> <li>• live system warning tags or signs</li> </ul> </li> <li>• following identified WHS requirements</li> <li>• isolating the HV battery electrical supply</li> <li>• depowering the vehicle</li> <li>• checking system for residual voltage.</li> </ul>
<p><b><i>Testing equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• AC/DC current clamp</li> <li>• battery management system (BMS) diagnostic equipment</li> <li>• diagnostic scanner or computer interface</li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• insulation or mega ohm tester</li> <li>• multimeter CAT 3 1000V</li> <li>• oscilloscope</li> <li>• thermal imaging equipment or non-contact thermometer.</li> </ul>
<b>Tests and checks</b> may include:	<ul style="list-style-type: none"> <li>• auxiliary motor controller operation</li> <li>• auxiliary motor operation</li> <li>• drive belt tension</li> <li>• r.p.m. of auxiliary motor</li> <li>• routing and damage of HV cabling</li> <li>• operation of auxiliary units, such as: <ul style="list-style-type: none"> <li>• air conditioning</li> <li>• power steering</li> </ul> </li> <li>• r.p.m. of auxiliary motor</li> <li>• routing and damage of HV cabling.</li> </ul>
<b>Corrective actions</b> may include:	<ul style="list-style-type: none"> <li>• removing and replacing the auxiliary motor or controller</li> <li>• setting and adjusting r.p.m. of auxiliary motor</li> <li>• tensioning drive belt</li> <li>• replacing cable connections</li> <li>• replacing system components</li> <li>• tightening connections.</li> </ul>
<b>Workplace requirements</b> may include:	<ul style="list-style-type: none"> <li>• industry codes of practice</li> <li>• manufacturer specifications</li> <li>• quality policies and procedures</li> <li>• safe work procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• workplace recording and reporting procedures.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Sector</b>	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4007 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles

### Modification History

Release	Comment
Release 2	<p>Replaces AURETH4007 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles (Release 1)</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to repair high voltage (HV) system instrumentation and safety interlocks in battery electric vehicles (BEVs). It includes testing the instrumentation data communication system and safety interlocks for correct operation. It involves working with HV automotive electrical components as well as low voltage (LV) alternating current (AC) and direct current (DC) automotive electrical components and battery systems.</p> <p>Importance is placed on the application of HV safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the repair of HV system instrumentation and safety interlocks in BEVs in the automotive industry.
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## Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Prerequisite units	AURETH3001 Depower battery electric vehicles
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## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for repair operations	<p>1.1.<i>Procedures and information</i> relevant to the task are sourced and work requirements confirmed</p> <p>1.2.<i>Workplace health and safety (WHS) requirements</i> and <i>appropriate precautions</i> are identified and applied</p> <p>1.3.Repair methods for the specific work requirement are selected and prepared for</p> <p>1.4.Tools and <i>testing equipment</i> necessary to conduct the work are assembled</p> <p>1.5.Technical and/or calibration requirements for diagnosis and repair of the HV system instrumentation and safety interlocks are established</p>
2. Perform diagnosis	<p>2.1.<i>Tests and checks</i> on instrumentation data communication system are carried out using manufacturer specifications and test procedures</p> <p>2.2.Vehicle <i>safety interlocks</i> are tested for correct operation</p> <p>2.3.Motor controller is checked for safe and correct operation</p> <p>2.4.Audible warning system (if applicable) is checked for operation</p> <p>2.5.Battery gauge state of charge (SOC) indicator is tested</p> <p>2.6.Tests and checks on HV contactor are carried out (if applicable) using diagnostic scanner or computer interface</p> <p>2.7.Test results are recorded</p>
3. Repair instrumentation and safety interlocks	<p>3.1.Test results are compared with manufacturer specifications to decide on appropriate <i>corrective actions</i></p> <p>3.2.Components are replaced, repaired and adjusted as required</p> <p>3.3.Repaired and replaced components are re-tested for correct operation</p> <p>3.4.Replacement, repair or adjustment procedures carried out are recorded</p>
4. Complete repair operations	<p>4.1.Work area is tidied, and tools and equipment replaced according to <i>workplace requirements</i></p> <p>4.2.Job card or repair order is completed according to</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>workplace requirements</p> <p>4.3.Client report is prepared on the outcomes of the diagnosis and repair according to workplace requirements</p> <p>4.4.Vehicle is prepared for return to the client</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to the diagnosis and repair of HV system instrumentation and safety interlocks in BEVs
  - use specialist tools and equipment
  - use computerised measuring equipment
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to:
  - interpret technical information and specifications
  - report and record actions
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with BEV electrical systems and components
  - optimise workflow and productivity

### Required knowledge

- components of HV BEVs and their functions
- WHS requirements relating to:
  - electrical safety
  - safe work practices
- principles of electricity, including AC and DC
- principles of operation of HV system instrumentation and safety interlocks
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice and environmental regulations relating to the diagnosis and repair of HV system instrumentation and safety interlocks
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to the diagnosis and repair of HV system instrumentation and safety interlocks



## Evidence Guide

Evidence Guide	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of the auxiliary motor/component is maintained when performing tests</li> <li>• check the operation of the HV system instrumentation and safety interlocks against manufacturer specifications</li> <li>• diagnose and replace, repair or adjust system components as required to correct deficiencies</li> <li>• complete relevant documentation for the diagnosis and repair of HV system instrumentation and safety interlocks.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using a BEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational BEV must be included in the</p>

## Evidence Guide

	<p>simulation.</p> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• a BEV</li> <li>• manufacturer specifications for the BEV</li> <li>• testing equipment</li> <li>• full range of essential tools and equipment</li> <li>• workplace documentation.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Procedures and information</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• diagrams and sketches</li> <li>• engineer or manufacturer design specifications and instructions</li> <li>• industry codes of practice</li> <li>• material safety data sheets (MSDS)</li> <li>• parts catalogues</li> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• workplace instructions and requirements.</li> </ul>
<p><b><i>WHS requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• elimination of hazardous materials and substances</li> <li>• first aid equipment</li> <li>• following emergency procedures</li> <li>• hazard and risk control</li> <li>• personal protective equipment (PPE) and clothing</li> <li>• safety equipment</li> <li>• techniques for manual handling, including shifting, lifting and carrying.</li> </ul>
<p><b><i>Appropriate precautions</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• analysing task to define risk</li> <li>• applying electrical safety precautions, such as: <ul style="list-style-type: none"> <li>• “one hand rule”</li> <li>• live system warning tags or signs</li> </ul> </li> <li>• isolating the HV battery electrical supply</li> <li>• depowering the vehicle</li> <li>• using PPE, such as: <ul style="list-style-type: none"> <li>• electrical safety gloves 1000V</li> <li>• HV insulating mats (Australian standards rated).</li> </ul> </li> </ul>
<p><b><i>Testing equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• AC/DC current clamp</li> <li>• battery management system (BMS) diagnostic equipment</li> <li>• diagnostic scanner or computer interface device</li> <li>• multimeter CAT 3 1000V</li> </ul>

	<ul style="list-style-type: none"> <li>• oscilloscope</li> <li>• thermal imaging equipment or non-contact thermometer.</li> </ul>
<b>Tests and checks</b> may include:	<ul style="list-style-type: none"> <li>• battery state of charge</li> <li>• operational tests of safety interlocks</li> <li>• testing instrumentation data communication system using scan tool, such as: <ul style="list-style-type: none"> <li>• CANBUS</li> <li>• Controller Area Network</li> <li>• diagnosis trouble codes (DTC).</li> </ul> </li> </ul>
<b>Safety interlocks</b> may include:	<ul style="list-style-type: none"> <li>• battery charger, including charge cable sensor</li> <li>• fault signals from controller</li> <li>• gear selector inhibitor switch</li> <li>• ignition or power key</li> <li>• inertia or impact sensor</li> <li>• isolation componentry, including HV contactor</li> <li>• motor over temperature control</li> <li>• under voltage protection.</li> </ul>
<b>Corrective actions</b> may include:	<ul style="list-style-type: none"> <li>• balancing state of charge</li> <li>• replacing or adjusting system components or sensors</li> <li>• replacing or repairing cable connections</li> <li>• tightening connections.</li> </ul>
<b>Workplace requirements</b> may include:	<ul style="list-style-type: none"> <li>• industry codes of practice</li> <li>• manufacturer specifications</li> <li>• quality policies and procedures</li> <li>• safe work procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• workplace recording and reporting procedures.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Sector</b>	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4008 Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4008 Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair high voltage (HV) systems used to heat, ventilate and cool the cabin in battery electric vehicles (BEVs). It involves testing systems for correct operation and replacing some components. It may include removal of refrigerant and replacement of refrigerant as well as performance testing of the system.</p> <p>Importance is placed on the application of HV safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions, in particular if the work involves removal and replacement of refrigerant. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the diagnosis and repair of HV cabin heating, ventilation and air conditioning (HVAC) systems in BEVs in the automotive industry.
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## Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Prerequisite units	AURETH3001 Depower battery electric vehicles
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## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for repair operations	<p>1.1.<i>Procedures and information</i> relevant to the task are sourced and work requirements confirmed</p> <p>1.2.<i>Workplace health and safety (WHS) requirements</i> and <i>appropriate precautions</i> are identified and applied</p> <p>1.3.Repair methods for the specific work requirement are selected and prepared for</p> <p>1.4.Tools and <i>testing equipment</i> necessary to conduct the work are assembled</p> <p>1.5.Technical and/or calibration requirements for diagnosis and repair of HV HVAC systems are established</p>
2. Perform diagnosis	<p>2.1.<i>Tests and checks</i> on HVAC adjustment and activation controls are carried out using manufacturer specifications and test procedures</p> <p>2.2.Air conditioning and electric heater systems are tested for correct operation</p> <p>2.3.HVAC contactors are tested for correct operation</p> <p>2.4.Results of diagnosis are recorded</p>
3. Repair HVAC system	<p>3.1.Results are compared with manufacturer specifications to decide on appropriate <i>corrective action</i></p> <p>3.2.Components are removed and replaced as required</p> <p>3.3.Replaced components are re-tested for correct operation</p> <p>3.4.Replacement, repair or adjustment procedures carried out are recorded</p>
4. Complete repair operations	<p>4.1.Work area is tidied, and tools and equipment replaced according to <i>workplace requirements</i></p> <p>4.2.Job card or repair order is completed according to workplace requirements</p> <p>4.3.Client report is prepared on the outcomes of the repair according to workplace requirements</p> <p>4.4.Vehicle is prepared for return to the client</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to the diagnosis and repair of HV HVAC systems in BEVs
  - use specialist tools and equipment
  - use computerised measuring equipment
  - report and record actions
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with BEV electrical and HVAC systems and components
  - optimise workflow and productivity

### Required knowledge

- components of HV BEVs and their functions
- WHS requirements relating to:
  - electrical safety
  - safe work practices
- principles of electricity, including:
  - alternating current (AC)
  - direct current (DC)
- principles of operation of HV HVAC systems
- risks associated when working with refrigerants and non-conductive lubricants and prevention of cross-contamination
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice and environmental regulations relating to the diagnosis and repair of BEV HVAC systems
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting

procedures relating to the diagnosis and repair of BEV HVAC systems
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## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of the HVAC components is maintained when performing tests</li> <li>• check the operation of the HV HVAC systems against manufacturer specifications</li> <li>• diagnose and replace, repair or adjust system components as required to correct deficiencies</li> <li>• complete relevant documentation.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using a BEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational BEV must be included in the simulation.</p> <p>The following resources should be made available:</p>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• a BEV</li> <li>• manufacturer specifications for the BEV</li> <li>• testing equipment</li> <li>• full range of essential tools and equipment</li> <li>• workplace documentation.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Procedures and information</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• diagrams and sketches</li> <li>• engineer or manufacturer design specifications and instructions</li> <li>• industry codes of practice</li> <li>• material safety data sheets (MSDS)</li> <li>• parts catalogues</li> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• workplace specifications and requirements.</li> </ul>
<p><b><i>WHS requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• elimination of hazardous materials and substances</li> <li>• first aid equipment</li> <li>• following emergency procedures</li> <li>• hazard and risk control</li> <li>• personal protective equipment (PPE) and clothing</li> <li>• safety equipment</li> <li>• techniques for manual handling, including shifting, lifting and carrying.</li> </ul>
<p><b><i>Appropriate precautions</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• analysing task to define risk</li> <li>• applying electrical safety precautions, such as: <ul style="list-style-type: none"> <li>• “one hand rule”</li> <li>• live system warning tags or signs</li> </ul> </li> <li>• checking system for residual voltage</li> <li>• depowering the vehicle</li> <li>• isolating the HV battery electrical supply</li> <li>• using PPE, such as: <ul style="list-style-type: none"> <li>• electrical safety gloves 1000V</li> <li>• HV insulating mats (Australian standards rated).</li> </ul> </li> </ul>
<p><b><i>Testing equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• AC/DC current clamp</li> <li>• air conditioning system service equipment</li> <li>• battery management system (BMS) diagnostic equipment</li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• insulation or mega ohm tester</li> <li>• multimeter CAT 3 1000V</li> <li>• oscilloscope</li> <li>• refrigerant leak detecting equipment</li> <li>• thermal imaging equipment or non-contact thermometer.</li> </ul>
<b>Tests and checks</b> may include:	<ul style="list-style-type: none"> <li>• operational tests of heating, ventilation and air conditioning</li> <li>• refrigerant leak detecting</li> <li>• testing of contactors.</li> </ul>
<b>Corrective action</b> may include:	<ul style="list-style-type: none"> <li>• removing and replacing control units</li> <li>• removing and replacing heater coolant</li> <li>• removing and replacing heating elements</li> <li>• removing and replacing HVAC components, such as condenser, evaporator, compressor and heater core.</li> </ul>
<b>Workplace requirements</b> may include:	<ul style="list-style-type: none"> <li>• industry codes of practice</li> <li>• manufacturer specifications</li> <li>• quality policies and procedures</li> <li>• safe work procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• workplace recording and reporting procedures.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Sector</b>	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4009 Diagnose and repair DC to DC converters in battery electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4009 Diagnose and repair DC to DC converters in battery electric vehicles (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair high voltage (HV) direct current (DC) to low voltage (LV) DC converters in battery electric vehicles (BEVs). It involves working with LV automotive electrical components as well as HV alternating current (AC) and DC automotive electrical components and battery systems. Work includes testing the converter and relevant accessories and applications for correct operation.</p> <p>Importance is placed on the application of HV safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the diagnosis, repair and replacement of the DC to DC converter in BEVs in the automotive industry.
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## Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

<b>Prerequisite units</b>	AURETH3001 Depower battery electric vehicles AURETR3025 Test, charge and replace batteries
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## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for repair operations	<p>1.1. <b>Procedures and information</b> relevant to the task are sourced and work requirements confirmed</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> and <b>appropriate precautions</b> are identified and applied</p> <p>1.3. Repair methods for the specific work requirement are selected and prepared for</p> <p>1.4. Tools and <b>testing equipment</b> necessary to conduct the work are assembled</p> <p>1.5. Technical and/or calibration requirements for diagnosis and repair of the DC to DC converter are established</p>
2. Perform diagnosis	<p>2.1. <b>Tests and checks</b> on DC to DC converter input and output voltage and current are carried out using manufacturer specifications and test procedures</p> <p>2.2. Relevant <b>applications and accessories</b> are tested and checked for correct operation</p> <p>2.3. Test results are recorded</p>
3. Repair DC to DC converter	<p>3.1. Test results are compared with manufacturer specifications to decide on <b>corrective action</b></p> <p>3.2. Components are removed and repaired or replaced as required</p> <p>3.3. Replaced or repaired components are re-tested for correct operation</p> <p>3.4. Replacement, repair or adjustment procedures are recorded on job card or repair order</p>
4. Complete repair operations	<p>4.1. Work area is tidied, and tools and equipment replaced according to <b>workplace requirements</b></p> <p>4.2. Job card or repair order is completed according to workplace requirements</p> <p>4.3. Client report is prepared on the outcomes of the diagnosis and repair according to workplace requirements</p> <p>4.4. Vehicle is prepared for return to the client</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to the diagnosis and repair of BEV DC to DC converters
  - use specialist tools and equipment
  - use computerised measuring equipment
  - report and record actions
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to accurately complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with the diagnosis and repair of BEV DC to DC converters
  - optimise workflow and productivity

### Required knowledge

- components of HV BEVs and their functions
- WHS requirements relating to:
  - safe work practices
  - electrical safety
  - principles of electricity, including AC and DC
- principles of operation of a DC to DC converter
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice and environmental regulations relating to the diagnosis and repair of a BEV DC to DC converter
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to the diagnosis and repair of a BEV DC to DC converter

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of the DC to DC converter is maintained when performing tests</li> <li>• diagnose the operation of the DC to DC converter against manufacturer specifications</li> <li>• remove and replace or repair the DC to DC converter</li> <li>• complete relevant documentation for the diagnosis and repair of the DC to DC converter.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using a BEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational BEV must be included in the simulation.</p> <p>The following resources must be made available for the assessment of this unit:</p>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• a BEV</li> <li>• manufacturer specifications for the BEV</li> <li>• testing equipment</li> <li>• full range of essential tools and equipment</li> <li>• workplace documentation.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Procedures and information</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• diagrams and sketches</li> <li>• engineer or manufacturer design specifications and instructions</li> <li>• industry codes of practice</li> <li>• material safety data sheets (MSDS)</li> <li>• parts catalogues</li> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• workplace specifications and requirements.</li> </ul>
<p><b><i>WHS requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• eliminating hazardous materials and substances</li> <li>• first aid equipment</li> <li>• following emergency procedures</li> <li>• hazard and risk control</li> <li>• personal protective equipment (PPE) and clothing</li> <li>• safety equipment</li> <li>• techniques for manual handling, including shifting, lifting and carrying.</li> </ul>
<p><b><i>Appropriate precautions</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• analysing task to define risk</li> <li>• applying electrical safety precautions, such as:             <ul style="list-style-type: none"> <li>• “one hand rule”</li> <li>• live system warning tags or signs</li> </ul> </li> <li>• checking for residual voltage</li> <li>• depowering the vehicle</li> <li>• isolating the HV battery electrical supply</li> <li>• using PPE, such as:             <ul style="list-style-type: none"> <li>• electrical safety gloves 1000V</li> <li>• HV insulating mats (Australian standards rated).</li> </ul> </li> </ul>
<p><b><i>Testing equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• AC/DC current clamp</li> <li>• battery management system (BMS) diagnostic equipment</li> <li>• multimeter CAT 3 1000V</li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• oscilloscope</li> <li>• thermal imaging equipment or non-contact thermometer.</li> </ul>
<i>Tests and checks</i> may include:	<ul style="list-style-type: none"> <li>• testing accessories and applications operating on LV DC</li> <li>• testing input and output voltage and current.</li> </ul>
<i>Applications and accessories</i> may include:	<ul style="list-style-type: none"> <li>• electric power steering (EPS)</li> <li>• electric vacuum pump</li> <li>• electric coolant pumps in: <ul style="list-style-type: none"> <li>• heating, ventilation and air conditioning (HVAC) system</li> <li>• powertrain cooling system</li> <li>• battery pack cooling system</li> </ul> </li> <li>• horn</li> <li>• wipers</li> <li>• radio</li> <li>• lights</li> <li>• indicators.</li> </ul>
<i>Corrective action</i> may include:	<ul style="list-style-type: none"> <li>• removing and replacing converter</li> <li>• replacing fuses.</li> </ul>
<i>Workplace requirements</i> may include:	<ul style="list-style-type: none"> <li>• manufacturer specifications and industry codes of practice</li> <li>• quality policies and procedures</li> <li>• safe work procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• workplace recording and reporting procedures.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Sector	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4010 Test high voltage batteries in hybrid electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4010 Test high voltage batteries in hybrid electric vehicles (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to test high voltage (HV) batteries in hybrid electric vehicles (HEVs). It includes identifying and confirming safety requirements, preparing for work, testing HV batteries, and completing work processes, including clean-up and documentation. Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities.</p> <p>Importance is placed on the application of HV electrical safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to testing HV batteries in HEVs, such as cars, trucks, motorcycles, marine applications and wheeled plant or equipment.
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## Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

<b>Prerequisite units</b>	AURETR3025 Test, charge and replace batteries
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## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Procedures and information</b> are sourced to determine job requirements, including testing method, and minimise task time</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b>, including personal safety needs, are identified and applied</p> <p>1.3. Tools and <b>testing equipment</b> are identified and checked for safe and effective operation</p>
2. Perform HV battery analysis	<p>2.1. Information for battery testing is accessed and correctly followed</p> <p>2.2. Battery tests are performed and results analysed according to product, manufacturer and component supplier specifications</p> <p>2.3. Battery testing procedures are carried out according to safe operating procedures and guidelines</p>
3. Complete service operations	<p>3.1. Work area is tidied, and tools and equipment are replaced according to <b>workplace requirements</b></p> <p>3.2. Job card or repair order is completed according to workplace requirements</p> <p>3.3. Report is prepared on the outcomes of the test of the HV battery system, according to workplace requirements</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to testing HV batteries in HEVs
  - complete tests and measurements to determine serviceability of batteries
  - use specialist tools
  - use computerised measuring and diagnostic equipment
  - report and record results
- literacy skills to collect, organise and understand information relating to work requirements, plans and safety procedures for HV battery testing
- communication skills to:
  - communicate ideas and information to enable confirmation of work requirements and specifications
  - interpret and apply common industry terminology
  - coordinate work with site supervisor, other workers and customers
  - report work outcomes and problems
- problem-solving skills to:
  - interpret technical information and specifications
  - interpret test results
  - identify repair options
- self-management skills to:
  - obtain information on HV battery testing procedures
  - manage risks and hazards associated with low voltage (LV) and HV HEV electrical systems and components
  - obtain equipment and material to avoid backtracking or workflow interruptions
  - use cooperative approaches to optimise workflow and productivity

### Required knowledge

- components of HV HEVs and their functions
- principles of electricity, including:
  - alternating current (AC)
  - direct current (DC)
- relevant WHS requirements relating to:
  - safe work practices
  - electrical safety
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice and environmental regulations relating to the testing of HEV HV batteries in the automotive workplace

- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to the testing of HEV HV batteries in the automotive workplace

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• communicate effectively with others involved in or affected by the work</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• test HV batteries in HEVs according to requirements</li> <li>• complete relevant documentation for recording HEV battery test results.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using an HEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational HEV must be included in the simulation.</p> <p>The following resources must be made available for the assessment of this unit:</p>

Evidence Guide	
	<ul style="list-style-type: none"><li>• appropriate PPE</li><li>• an HEV</li><li>• manufacturer specifications for the HEV</li><li>• testing equipment</li><li>• full range of essential tools and equipment</li><li>• workplace documentation.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Procedures and information*** may include:

- Australian standards
- diagrams and sketches
- engineer design specifications and instructions
- industry codes of practice
- original equipment manufacturer (OEM) specifications
- verbal, written and graphical instructions issued by authorised internal and external persons
- workplace specifications and requirements.

***WHS requirements*** may include:

- applying electrical safety precautions, such as:
  - “one hand rule”
  - live system warning tags or signs
- electrical protective equipment, such as:
  - electrical safety gloves 1000V
  - HV insulating mats (Australian standards rated)
- eliminating hazards and hazardous materials and substances
- following emergency procedures, such as:
  - emergency shutdown and stopping of equipment
  - extinguishing fires
  - workplace first aid requirements
  - site evacuation
- personal protective equipment (PPE) and clothing
- workplace environment and safety equipment.

***Testing equipment*** may include:

- AC/DC current clamp
- battery management system (BMS) diagnostic equipment
- diagnostic scanner or computer interface device
- insulated hand tools
- multimeter CAT 3 1000V
- oscilloscope
- thermal imaging equipment or non-contact

Range Statement	
	thermometer.
<b>Workplace requirements</b> may include:	<ul style="list-style-type: none"><li>• industry codes of practice</li><li>• manufacturer specifications</li><li>• quality policies and procedures</li><li>• safe work procedures</li><li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li><li>• workplace recording and reporting procedures.</li></ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Sector</b>	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4011 Deactivate and reinitialise power supply in hybrid electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4011 Deactivate and reinitialise power supply in hybrid electric vehicles (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to isolate the low voltage (LV) and high voltage (HV) electrical power supply of hybrid electric vehicles (HEVs). It involves calibrating systems that require re-setting once the power supply and system are re-energised.</p> <p>Importance is placed on the application of HV safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to HEVs that have particular requirements for deactivating and reinitialising electrical circuits and equipment, including resetting electrical or electronic HV and LV sub-systems and components.</p> <p>It involves working with HV alternating current (AC) and direct current (DC) automotive electrical components.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for repair operations	<p>1.1.<i>Procedures and information</i> relevant to the task are sourced and work requirements confirmed</p> <p>1.2.<i>Workplace health and safety (WHS) requirements</i> and <i>appropriate precautions</i> are identified and applied</p> <p>1.3.Methods for the specific work requirement are selected and prepared for</p> <p>1.4.Tools and <i>testing equipment</i> necessary to conduct the work are assembled</p> <p>1.5.Technical and/or calibration requirements for deactivating and reinitialising the power supply are established</p>
2. Deactivate power supply	<p>2.1.Information relevant for deactivation is followed</p> <p>2.2.Procedure to deactivate vehicle at main control is followed to commence deactivation process</p> <p>2.3.HV power supply connection is located and isolated according to manufacturer instructions, taking appropriate precautions to prevent electric shock to self and others</p> <p>2.4.LV power supply is located and disconnected according to manufacturer instructions and vehicle and workplace safety procedures</p> <p>2.5.Vehicle is stabilised and checked for residual voltage in system</p> <p>2.6.HV power supply connection is secured and retained to prevent re-fit by third party</p> <p>2.7.Vehicle is identified with warning tags or sign to indicate potential hazards</p>
3. Reinitialise power supply	<p>3.1.Information for reinitialising procedure is accessed and followed</p> <p>3.2.LV and HV power supplies are reconnected and activated</p> <p>3.3.Technical and/or calibration requirements are established for reinitialising the power supply</p> <p>3.4.Diagnostic and testing equipment is used to check and recalibrate <i>sub-systems</i> affected by deactivation process</p> <p>3.5.Main power supply and sub-systems are checked for correct operation upon reactivation</p> <p>3.6.<i>Workplace requirements</i> are followed to report</p>

ELEMENT	PERFORMANCE CRITERIA
	and record subsequent faults with the reinitialising process

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to the deactivating and reinitialising of LV and HV power supplies and components in HEVs
  - use specialist tools and equipment
  - use computerised measuring and diagnostic equipment
  - report and record actions
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with LV and HV HEV electrical systems and components
  - optimise workflow and productivity

### Required knowledge

- components of LV and HV HEVs and their functions
- relevant WHS requirements relating to:
  - safe work practices
  - electrical safety
- principles of electricity, including AC and DC
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice and environmental regulations relating to deactivating and reinitialising HEV power supplies in the automotive workplace
- vehicle-specific electrical requirements
- workplace policies and procedures, including quality, recording and reporting procedures relating to deactivating and reinitialising HEV power supplies in the automotive workplace

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of components and system is maintained when performing tests</li> <li>• check that the deactivation and reinitialisation process is followed and applied according to manufacturer specifications</li> <li>• complete relevant documentation for diagnosed faults encountered when deactivating and reinitialising the HEV power supply.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>Competency is to be assessed using an HEV that uses HV and LV AC/DC electrical systems. Where simulation is used, an operational HEV must be included in the simulation.</p> <p>The following resources must be made available for the</p>

<b>Evidence Guide</b>	
	<p>assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• an HEV</li> <li>• manufacturer specifications for the HEV</li> <li>• testing equipment</li> <li>• full range of essential tools and equipment</li> <li>• workplace documentation.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Procedures and information</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• diagrams and sketches</li> <li>• engineer design specifications and instructions</li> <li>• industry codes of practice</li> <li>• original equipment manufacturer (OEM) specifications</li> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• workplace specifications and requirements.</li> </ul>
<p><b><i>WHS requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• eliminating of hazardous materials and substances</li> <li>• first aid equipment</li> <li>• following emergency procedures</li> <li>• hazard and risk control</li> <li>• material safety data sheets (MSDS)</li> <li>• personal protective equipment (PPE) and clothing</li> <li>• safety equipment</li> <li>• techniques for manual handling, including shifting, lifting and carrying.</li> </ul>
<p><b><i>Appropriate precautions</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• analysing task to define risk</li> <li>• applying electrical safety precautions, such as:             <ul style="list-style-type: none"> <li>• “one hand rule”</li> <li>• live system warning tags or signs</li> </ul> </li> <li>• isolating the LV and HV battery electrical supply</li> <li>• stabilising the vehicle electrical circuits</li> <li>• using PPE, such as:             <ul style="list-style-type: none"> <li>• electrical safety gloves 1000V</li> <li>• HV insulating mats (Australian standards rated).</li> </ul> </li> </ul>
<p><b><i>Testing equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• AC/DC current clamp</li> <li>• battery management system (BMS) diagnostic equipment</li> <li>• diagnostic scanner or computer interface device</li> <li>• insulated hand tools</li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• multimeter CAT 3 1000V</li> <li>• oscilloscope</li> <li>• thermal imaging equipment or non-contact thermometer.</li> </ul>
<i>Sub-systems</i> may include:	<ul style="list-style-type: none"> <li>• air conditioning control system</li> <li>• anti-lock braking system (ABS) and traction control system (TCS)</li> <li>• automatic power windows</li> <li>• automatic transmission</li> <li>• auxiliary cooling system for the internal combustion engine (ICE) and HV system</li> <li>• driver information warning display</li> <li>• electric power steering (EPS)</li> <li>• electronic brake control system</li> <li>• electronic stability control</li> <li>• headlight aiming control system</li> <li>• ICE control management system</li> <li>• multi-function display units, including sat-nav systems</li> <li>• tyre pressure warning system (TPWS).</li> </ul>
<i>Workplace requirements</i> may include:	<ul style="list-style-type: none"> <li>• industry codes of practice</li> <li>• manufacturer specifications</li> <li>• quality policies and procedures</li> <li>• safe work procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• workplace recording and reporting procedures.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Sector	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4012 Service and maintain electrical components in hybrid electric vehicles

### Modification History

Release	Comment
Release 2	Replaces AURETH4012 Service and maintain electrical components in hybrid electric vehicles (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to service and maintain electrical components of hybrid electric vehicles (HEVs). It involves working with automotive electrical components and electrical systems that support the control and operation of the HEV.</p> <p>Importance is placed on the application of high voltage (HV) and low voltage (LV) electrical safety procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the inspection, service and maintenance of HEVs in the automotive industry.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Prerequisite units	AURETH4011 Deactivate and reinitialise power supply in hybrid electric vehicles
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## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service operations	<p>1.1. <i>Information and documents</i> are sourced</p> <p>1.2. <i>Workplace health and safety (WHS) requirements</i> and other <i>appropriate precautions</i> are identified and taken</p> <p>1.3. Service method appropriate for the specific circumstances is selected and prepared for</p> <p>1.4. Tools and <i>testing equipment</i> necessary to conduct the work are assembled</p> <p>1.5. Technical and/or calibration requirements for inspection and service of HEV electrical components are established</p>
2. Check associated electrical components	<p>2.1. Information relevant to the inspection and service of HEV components and systems is followed</p> <p>2.2. Checks are conducted on the condition and operation of associated <i>electrical components</i></p> <p>2.3. Problems with the performance of electrical components are identified, and corrective action is taken</p> <p>2.4. Faults and corrective action are recorded</p>
3. Complete service operations	<p>3.1. Work area is tidied, and tools and equipment are replaced according to <i>workplace requirements</i></p> <p>3.2. Job card or repair order is completed according to workplace requirements</p> <p>3.3. Report is prepared on the outcomes of the service and maintenance according to workplace requirements</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - use workplace technology relating to the service and maintenance of HEVs
  - use specialist tools and equipment
  - report and record actions
- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor, other workers and customers
  - report work outcomes and problems
- literacy skills to interpret technical information and specifications
- numeracy skills to complete tests and measurements to determine correct operation
- problem-solving skills to:
  - interpret test results
  - identify repair options
- self-management skills to:
  - manage risks and hazards associated with HV HEV electrical systems and components
  - optimise workflow and productivity

### Required knowledge

- electrical/electronic components of HEVs and their functions
- HEV-specific electrical requirements
- WHS requirements relating to:
  - safe work practices
  - electrical safety
- principles of electricity, including:
  - alternating current (AC)
  - direct current (DC)
- applicable commonwealth, state or territory legislation, regulations, standards, codes of practice and environmental regulations relating to the service and maintenance of HEVs in an automotive workplace
- workplace policies and procedures, including quality, recording and reporting procedures relating to the service and maintenance of HEVs in an automotive workplace

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• comply with WHS requirements and safe work practices</li> <li>• ensure electrical and mechanical integrity of any component and system is maintained when performing tests</li> <li>• check associated electrical components and systems of HV HEVs according to manufacturer's specifications</li> <li>• complete relevant documentation for the service and maintenance of the HEV.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice</li> </ul> <p>Competency is to be assessed using an HEV that uses HV and LV AC/DC electrical systems. Where simulation is used an operational HEV must be included in the simulation.</p> <p>The following resources must be made available for the assessment of this unit:</p>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"> <li>• appropriate PPE</li> <li>• an operational HEV</li> <li>• manufacturer specifications for the HEV</li> <li>• testing equipment</li> <li>• full range of essential tools and equipment</li> <li>• workplace documentation.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Information and documents*** may include:

- Australian standards
- diagrams and sketches
- engineer and manufacturer design specifications and instructions
- industry codes of practice
- original equipment manufacturer (OEM) specifications
- verbal, written and graphical instructions issued by authorised internal and external persons
- workplace specifications and requirements
- workshop manuals and specifications.

***WHS requirements*** may include:

- eliminating hazardous materials and substances
- first aid equipment
- following emergency procedures
- hazard and risk control
- material safety data sheets (MSDS)
- personal protective equipment (PPE) and clothing
- safety equipment
- techniques for manual handling, including shifting, lifting and carrying.

***Appropriate precautions*** may include:

- analysing task to define risk
- applying electrical safety precautions, such as:
  - “one hand rule”
  - live system warning tags or signs
- depowering the vehicle
- isolating the HV battery supply
- using PPE, such as:
  - electrical safety gloves 1000V
  - HV insulating mats (Australian standards rated).

<b>Range Statement</b>	
<b>Testing equipment</b> may include:	<ul style="list-style-type: none"> <li>• AC/DC current clamp</li> <li>• battery management system (BMS) diagnostic equipment</li> <li>• diagnostic scanner or computer interface device</li> <li>• insulated hand tools</li> <li>• multimeter CAT 3 1000V</li> <li>• oscilloscope</li> <li>• thermal imaging equipment or non-contact thermometer.</li> </ul>
<b>Electrical components</b> may include:	<ul style="list-style-type: none"> <li>• air conditioning control system</li> <li>• anti-lock braking system (ABS) and traction control system (TCS)</li> <li>• automatic power windows</li> <li>• auxiliary cooling system for the internal combustion engine (ICE) and HV system</li> <li>• driver information warning display</li> <li>• electric power steering</li> <li>• electronic brake control system</li> <li>• electronic stability control</li> <li>• electronically controlled automatic transmission</li> <li>• headlight aiming control system</li> <li>• ICE control management system</li> <li>• multi-function display units, including sat-nav system</li> <li>• tyre pressure warning system (TPWS).</li> </ul>
<b>Workplace requirements</b> may include:	<ul style="list-style-type: none"> <li>• industry codes of practice</li> <li>• manufacturer specifications</li> <li>• quality policies and procedures</li> <li>• safe work procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• workplace recording and reporting procedures.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Sector</b>	Technical – Hybrid and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH4014 Diagnose complex faults in battery electric and hybrid electric vehicle systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in battery electric and hybrid electric vehicle systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical or electronic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of battery electric and hybrid electric vehicle systems of light vehicles, heavy commercial vehicles, and vehicles in the mining, construction and agricultural environments.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <b>battery electric and hybrid electric vehicle systems</b> are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, equipment and system isolation requirements, and personal protection needs are observed and applied throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> with battery electric and hybrid electric vehicle systems are identified and confirmed from direct and/or indirect evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace requirements and practices</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to battery electric and hybrid electric vehicle systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of battery electric and hybrid electric vehicle systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of battery electric and hybrid electric vehicle systems
- types, functions and operations of electrical and electronic systems in battery electric and hybrid electric vehicles
- theory of diagnosis, including concept, design and planning
- electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetics, inductance, discrete electronic components, logic families and radio frequency
- types, functions, operations and limitations of diagnostic testing equipment related to battery electric and hybrid electric vehicle systems
- testing procedures of battery electric and hybrid electric vehicle systems
- methods and processes for documenting and reporting diagnostic findings and recommendations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different battery electric and hybrid electric vehicle systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in battery electric and hybrid electric vehicle systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with real or simulated battery electric and hybrid

## EVIDENCE GUIDE

	<p>electric vehicle systems faults</p> <ul style="list-style-type: none"><li>• tools and equipment appropriate for the diagnosis of complex faults in battery electric and hybrid electric vehicle systems</li><li>• technical reference information and workplace instructions.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Battery electric and hybrid electric vehicle systems*** may include:

- traction control systems
- steering and braking systems
- electronic stability systems
- electric traction motors and control systems
- high voltage/low voltage charging systems
- heating, ventilation, air conditioning and cooling (HVAC) systems
- vehicle dynamic control
- closed loop electronic and multi-class bi-directional universal switch (BUS) systems.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
  - safety management systems, including equipment and system isolation requirements
- hazard control, including control of hazardous materials and toxic substances

***Faults*** may include:

- electrical and electronic failures in battery electric and hybrid electric vehicle systems
- direct faults in input sensors, output actuators, wiring harnesses or computer systems
- calibration and adjustment specifications, component specifications, and component assembly
- component damage and system modifications
- indirect faults caused by the influence of external electrical and electronic systems, which may or may not be faulty in their primary operations.

***Tests*** may include:

- wiring and connector integrity
- operator and specification of input and output devices

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>controlling electronic components and computers</li><li>data interpretation</li><li>readings relating to direct, indirect and intermittent causes.</li></ul>
<i>Testing equipment</i> may include:	<ul style="list-style-type: none"><li>analogue and digital multimeters</li><li>lab oscilloscopes</li><li>scan tools</li><li>on-board diagnostic systems</li><li>test lights and test LEDs</li><li>pulse generators</li><li>manufacturer and component supplier testing equipment.</li></ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"><li>analysing manufacturer and component supplier specifications, schematics and operational procedures relating to battery electric and hybrid electric vehicle systems</li><li>six-step troubleshooting plan</li><li>discover-investigate-fix methodology.</li></ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Hybrid Vehicle and Battery Electric Vehicle

## Custom Content Section

Not applicable.

## AURETH5013 Analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems

### Modification History

Release	Comment
Release 1	Replaces AURT576093A Analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<ul style="list-style-type: none"><li>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</li><li>1.2. Benchmark specifications for correctly functioning hybrid vehicle systems are accessed and interpreted.</li><li>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</li><li>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</li><li>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</li></ul>
2. Prepare for analysis and evaluation	<ul style="list-style-type: none"><li>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</li><li>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</li><li>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</li><li>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</li><li>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</li><li>2.6. Hybrid vehicle system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</li></ul>
3. Apply the analysis and evaluative methodology	<ul style="list-style-type: none"><li>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</li><li>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</li><li>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</li><li>3.4. Analytical findings and results are evaluated against agreed</li></ul>

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
	<p>criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary hybrid vehicle systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the types, functions and operations of systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the concepts, types, functions, operations and limitations of electric and hybrid vehicle systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance, high-voltage safety requirements, high-voltage battery technology, high-voltage inverter, high-voltage permanent magnet dc motors, high-voltage wire wound field magnet motors, high-voltage single and three-phase ac motors, high-voltage permanent magnet three-phase ac motors, dc stepper motors, series hybrid drive, parallel hybrid drive, discrete electronic components, logic families and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
equipment. <ul style="list-style-type: none"><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li><li>• general knowledge of personal computer operation.</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three different hybrid vehicle systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different hybrid vehicle systems.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, operational hybrid vehicle systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to

<b>EVIDENCE GUIDE</b>	
	<p>be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Electric and hybrid vehicle systems</b>	Electric and hybrid vehicle systems are to include petrol/electric hybrid vehicles, series and parallel drive vehicles, industrial floor cleaners, forklifts and golf buggies.
<b>Coverage</b>	Coverage is to include battery technology, motor drive systems, motor controllers, air conditioning systems, electronic protection systems and multi-class bus systems.
<b>Electric and hybrid vehicle systems electrical and electronic failures</b>	Electric and hybrid vehicle systems electrical and electronic failures covered by this unit are to include direct faults in input sensors, output actuators, including inverters, high-voltage AC and DC motors, high-voltage generators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Electric and hybrid vehicle systems failures</b>	Electric and hybrid vehicle systems failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based

<b>RANGE STATEMENT</b>	
	criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards and are to include the disarming of supplementary restraint systems (SRS) by manufacturer/ component supplier specifications.
<b>Testing equipment</b>	Testing equipment is to include multimeters, lab oscilloscopes, data scanners, test lights, battery testers and test LEDs, and may include manufacturer/component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include batteries, drive motor, generator, inverter, chargers, motor controller, emissions, wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to electric and hybrid vehicle systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to electric and hybrid vehicle system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Hybrid Vehicle and Battery Electric Vehicle
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## AURETK1001 Identify, select and use low voltage electrical test equipment

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to identify, select and safely use basic low voltage (LV) electrical test equipment for the purpose of testing, diagnosing and rectifying LV electrical conditions and faults in motor vehicles.</p> <p>Work involves identifying and selecting LV electrical test equipment by type and name, applying methods for its safe use, and storing it.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the identification and use of low voltage test equipment for basic circuit and system testing on light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work is normally carried out under supervision, in defined contexts and within established parameters, with the requirement for only limited decision making by the candidate.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify LV electrical test equipment	<p>1.1.<i>Low voltage electrical test equipment</i> types suitable to task are identified</p> <p>1.2.Function and method of operation of equipment are confirmed prior to use</p> <p>1.3.<i>Workplace health and safety (WHS) requirements</i> and <i>safe operating procedures</i> are identified and applied</p>
2. Select correct equipment for workplace application	<p>2.1.LV electrical test equipment appropriate to task is selected according to <i>workplace requirements</i></p> <p>2.2.Equipment is checked to confirm condition and performance</p>
3. Use electrical test equipment	<p>3.1.Electrical test equipment is used in a safe manner to prevent injury to self and others and damage to vehicle or other workplace equipment</p> <p>3.2.Equipment is connected without causing damage to vehicle or equipment as a result of <i>inappropriate testing procedures</i></p> <p>3.3.Workplace safe operating procedures are followed during the use of test equipment</p> <p>3.4.Test results or readings are interpreted and confirmed according to job or workplace requirements</p>
4. Finalise work processes	<p>4.1.Equipment is cleaned, inspected and checked</p> <p>4.2.Equipment is securely and appropriately stored</p> <p>4.3.Fixed electrical test equipment is isolated where required</p> <p>4.4.Documents are completed according to workplace requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow written and verbal instructions
  - communicate basic information relating to the safe use of LV electrical test equipment
- literacy skills to:
  - read and follow basic vehicle repair information and associated LV electrical test equipment manuals
  - read and follow information on standard operating procedures
- numeracy skills to:
  - interpret numbers as a measure of electrical power or resistance
  - make simple calculations as they relate to electrical power or resistance
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities that implement and follow standard workplace procedures
- problem-solving skills to:
  - recognise a workplace problem or potential problem
  - refer problems outside area of responsibility to appropriate person
  - identify defects and potential problems with LV electrical test equipment
- self-management skills to:
  - locate and identify appropriate electrical test equipment
  - recognise limitations and seek timely advice
  - follow basic workplace documentation, such as operating procedures
- teamwork skills to work with others and in a team by cooperating with team members
- technical skills to:
  - identify types of LV electrical test equipment
  - select equipment appropriate to the task
  - use equipment safely
  - store equipment according to manufacturer specifications and standard operating procedures
- technology skills to use workplace technology to assist with work practices

#### Required knowledge

- WHS regulations, requirements, equipment and material relating to working with low voltage electrical test equipment, including:
  - personal safety requirements

**REQUIRED SKILLS AND KNOWLEDGE**

- low voltage electrical test equipment safety and operating procedures
- basic electrical circuit theory
- equipment selection procedures
- types, characteristics, uses and limitations of low voltage electrical test equipment
- workplace policies and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- identify low voltage electrical test equipment
- select and safely use personal protective equipment
- select and safely use low voltage electrical test equipment
- interpret and report electrical test results
- use methods appropriate for storage of low voltage electrical test equipment.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available:

- low voltage electrical test equipment of the type required for automotive diagnosis and repair
- WHS and safety equipment, such as personal protective equipment
- functioning vehicle electrical systems and components or vehicles capable of being tested
- specifications and work instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Low voltage electrical test equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• multimeters</li> <li>• test lights and probes</li> <li>• load testers</li> <li>• circuit testers</li> <li>• oscilloscopes</li> <li>• ignition module test equipment</li> <li>• emissions analysers</li> <li>• leak detectors</li> <li>• fuel system analysers.</li> </ul>
<p><b><i>Workplace health and safety requirements:</i></b></p>	<ul style="list-style-type: none"> <li>• are to include those prescribed under regulations, codes of practice, and workplace safety policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• emergency shutdown</li> <li>• use of fire-fighting equipment</li> <li>• first aid training and response</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• site evacuation procedures.</li> </ul> </li> </ul>
<p><b><i>Safe operating procedures</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• being involved in an operational risk assessment associated with vehicle movement</li> <li>• safe use of automotive electrical test equipment</li> <li>• electrical safety</li> <li>• manual and mechanical lifting and shifting</li> <li>• safe handling of material</li> <li>• procedures for working in proximity to others and site visitors</li> <li>• emergency shutdown.</li> </ul>
<p><b><i>Workplace requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• material safety data sheets (MSDS)</li> <li>• workplace work specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• safe work procedures relating to the use of LV electrical test equipment</li><li>• signage</li><li>• verbal, written and graphical instructions</li><li>• work bulletins and memos</li><li>• work schedules and plans</li><li>• workplace policies and procedures.</li></ul>
<i>Inappropriate testing procedures</i> may include:	<ul style="list-style-type: none"><li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes:<ul style="list-style-type: none"><li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li><li>• probing terminal and connectors with inappropriate test probes</li><li>• pushing sharp probes and objects into wiring insulation.</li></ul></li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Tools and Equipment

**Custom Content Section**

Not applicable.

## AURETK2002 Use and maintain automotive electrical test equipment

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to select, safely use and maintain automotive electrical test equipment used in an automotive workplace for the purpose of identifying, diagnosing and rectifying electrical and electronic faults in motor vehicles.</p> <p>Work involves identifying and confirming job requirements; preparing for work; selecting, using, servicing, maintaining and storing automotive electrical testing equipment; and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to where equipment used is dedicated to an electrical or electronic diagnosis or repair operation or machine-type function used for electrical system or component repair.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select equipment suitable to workplace application	<p>1.1. <i>Workplace health and safety (WHS) requirements</i> and appropriate precautions are identified and applied</p> <p>1.2. <i>Electrical test equipment</i> and other suitable equipment is selected for use in the workplace environment according to job and <i>workplace requirements</i></p> <p>1.3. Equipment condition and functionality are confirmed prior to use</p>
2. Use electrical test equipment	<p>2.1. Electrical test equipment is used in a safe manner to prevent injury to self and others</p> <p>2.2. Electrical test equipment is connected to vehicle or equipment without causing damage as a result of <i>inappropriate testing procedures</i></p> <p>2.3. Workplace <i>safe operating procedures</i> are followed during the use of test equipment</p>
3. Service and maintain equipment	<p>3.1. Damaged or faulty equipment is tagged and removed from the workplace for repair or replacement and reported according to workplace <i>maintenance methods</i></p> <p>3.2. Test equipment is inspected, serviced, adjusted and/or maintained in line with manufacturer and component supplier schedule within scope of own responsibility</p> <p>3.3. Servicing and maintenance operations are carried out according to industry regulations and guidelines, WHS requirements and workplace policies and procedures</p>
4. Finalise work processes	<p>4.1. Test equipment is cleaned, inspected and checked</p> <p>4.2. Test equipment is securely and appropriately stored</p> <p>4.3. Fixed electrical test equipment is isolated where required</p> <p>4.4. Documents are completed according to workplace requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- technical skills to:
  - identify types of automotive electrical test equipment
  - select test equipment appropriate to the task
  - use test equipment safely
  - identify and analyse technical information
  - identify test equipment defects
  - store equipment according to manufacturer specifications and standard operating procedures
- communication skills to:
  - follow written and verbal instructions
  - communicate basic information relating to the safe use of electrical test equipment
- literacy skills to:
  - read and follow basic vehicle repair information and electrical test equipment instruction manuals
  - read and follow information on standard operating procedures
- numeracy skills to interpret numbers as a measure of electrical power or resistance
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities that implement and follow standard workplace procedures
- problem-solving skills to:
  - recognise a workplace problem or potential problem
  - refer problems outside area of responsibility to appropriate person
  - identify defects and potential problems with electrical test equipment
- self-management skills to:
  - locate and identify electrical test equipment appropriate to the task
  - recognise limitations and seek timely advice
  - follow basic workplace documentation, such as operating procedures
- teamwork skills to:
  - work with others and in a team by cooperating with team members
  - apply knowledge of own role to support workplace activities and tasks
- technology skills to use workplace technology to assist with work practices

#### Required knowledge

- WHS regulations, requirements, equipment and material relating to automotive electrical test

**REQUIRED SKILLS AND KNOWLEDGE**

equipment, including:

- personal safety requirements
- test equipment safety and operating procedures
- test equipment selection procedures
- basic maintenance procedures for automotive electrical test equipment
- types, characteristics, uses and limitations of automotive electrical test equipment
- work organisation and planning processes relating to automotive electrical test equipment
- workplace policies and procedures relating to diagnosing electrical faults on vehicles

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- select and safely use personal protective equipment
- select and safely use automotive electrical test equipment
- undertake basic maintenance and storage of electrical test equipment within scope of own responsibility.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available:

- vehicles and electrical components that can be used to simulate conditions that require use of electrical test equipment and diagnosis of system condition or fault
- materials and equipment relevant to the use and maintenance of automotive electrical test equipment
- materials and equipment relevant to the secure storage of automotive electrical test equipment
- specifications and work instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety requirements:***

- are to include those prescribed under regulations, codes of practice, and workplace safety policies and procedures
- may include
  - personal protective clothing and equipment
  - emergency shutdown
  - use of fire-fighting equipment
  - first aid training and response
  - hazard control, including control of hazardous materials and toxic substances
  - site evacuation procedures.

***Electrical test equipment***  
may include:

- multimeters
- test lights and probes
- logic probes
- scan tools
- load testers
- circuit testers
- oscilloscopes
- computer
- ignition module test equipment
- alternator or starter test bench
- distributor test bench
- emissions analysers
- leak detectors
- fuel system analysers.

***Workplace requirements***  
may include:

- Australian standards
- engineer's design specifications and instructions
- instructions issued by authorised workplace or external persons
- material safety data sheets (MSDS)
- workplace work specifications and requirements
- regulatory and legislative requirements relating to the automotive industry
- safe work procedures relating to the use and maintenance of electrical test equipment

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• signage</li> <li>• verbal, written and graphical instructions</li> <li>• work bulletins and memos</li> <li>• work schedules and plans</li> <li>• workplace policies and procedures.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Safe operating procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• conducting operational risk assessment and treatments associated with vehicle movement</li> <li>• safe use of automotive electrical test equipment</li> <li>• electrical safety</li> <li>• manual and mechanical lifting and shifting</li> <li>• procedures for working in proximity to others and site visitors</li> <li>• safe handling of material.</li> </ul>
<b><i>Maintenance methods</i></b> may include:	<ul style="list-style-type: none"> <li>• routine maintenance to test equipment according to schedules</li> <li>• labelling faulty tools and equipment</li> <li>• performing minor electrical test equipment repairs, adjustments or calibration</li> <li>• documenting or tagging equipment as faulty or out-of-service.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Tools and Equipment

**Custom Content Section**

Not applicable.

## AURETR1001 Remove and tag automotive electrical system components

### Modification History

Release	Comment
Release 1	<p>Replaces AURE100064A Remove and tag automotive electrical system components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to remove and tag automotive electrical system components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work involved includes electrical systems of light vehicles, motorcycles, heavy vehicles road transport, heavy vehicles mobile plant, outdoor power equipment and marine.</p> <p>Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove and tag automotive electrical components	<ul style="list-style-type: none"><li>1.1. Nature and scope of work requirements are identified and confirmed</li><li>1.2. WHS requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.3. Procedures and information such as workshop manuals and specifications, and tooling are sourced</li><li>1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.5. Dangers associated working with removal and tagging of automotive electrical system components are observed</li></ul>
2. Remove automotive electrical system components	<ul style="list-style-type: none"><li>2.1. Automotive electrical components for removal are identified</li><li>2.2. Methods for the conduct of removal and tagging are implemented in accordance with manufacturer/component supplier specifications</li><li>2.3. Components are removed without damage</li><li>2.4. Inspection of components is carried out</li><li>2.5. Report is processed in accordance with enterprise procedures</li></ul>
3. Tag automotive electrical components	<ul style="list-style-type: none"><li>3.1. Tagging procedures are identified</li><li>3.2. Resource requirements for tagging are identified and support equipment is identified and prepared</li><li>3.3. Components are tagged without damage</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills, e.g. when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removing and tagging automotive electrical components, including use of measuring equipment and communication devices, and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- automotive electrical terminology
- function of each component
- relationship of body components to each other
- application of body components
- removal procedures
- tagging procedures
- quality procedures
- organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, removing and tagging a range of components by their title and application
- conducting removal and tagging without damage to components or tooling and equipment.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to removing and tagging automotive electrical components
- equipment, hand and power tooling appropriate to removing and tagging automotive electrical components
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the AUR12 Automotive Industry Retail, Service and Repair Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods include tagging by title and application
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, and working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to: <ul style="list-style-type: none"> <li>waste management and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian standards, internal quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include:

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• hand tooling and hand held power tooling</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• tags and cleaning material</li></ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"><li>• verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li></ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets (MSDS) and Australian Design Rules</li><li>• safe work procedures related to removing and tagging automotive electrical components</li><li>• organisation work specifications and requirements</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR1002 Test, service and maintain battery storage systems

### Modification History

Release	Comment
Release 1	Replaces AURE118671A Test, service and maintain battery storage systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to inspect, service and maintain battery storage systems in on-site major earth moving and plant equipment.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake inspection	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as site procedures and specifications, and tooling are sourced</p> <p>1.4.Technical requirements for inspection are sourced and support equipment is identified and prepared</p> <p>1.5.Warnings in relation to working with batteries are observed</p>
2. Conduct inspection	<p>2.1.Methods for the conduct of inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/component supplier specifications</p> <p>2.3.Results are documented with evidence and supporting information and recommendations made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Prepare to service and maintain	<p>3.1.WHS requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for servicing and maintenance are identified and support equipment is identified and prepared</p>
4. Carry out service and maintenance	<p>4.1.Methods for the conduct of service and/or maintenance are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments made during service and/or maintenance are in accordance with manufacturer/component supplier specifications</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored</p> <p>5.2.Waste and scrap is removed following workplace procedure</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</p> <p>5.6.Tooling and equipment is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- analytical skills for identification and analysis of technical information
- plain English literacy and communication skills in relation to dealing with customers and team members
- questioning and active listening skills for example when obtaining information from customers
- oral communication skills sufficient to convey information and concepts to customers
- as applied to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interacting effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to inspection, servicing and maintenance of battery storage systems, including use of specialist tooling, measuring equipment and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with battery testing equipment
- operating principles and layout of battery storage systems
- inspection procedures
- service and/or maintenance procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- servicing and maintaining battery storage systems in accordance with manufacturer/component supplier and site requirements
- completing inspection in accordance with manufacturer/component supplier requirements
- completing work within workplace timeframes
- completing workplace documents.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to inspection, servicing and maintenance of battery storage systems
- equipment, hand and power tooling appropriate to inspection, servicing and maintenance of battery storage systems
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

	<p>performance together with application of underpinning knowledge.</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting and working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include:

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• hand tooling</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• cleaning material</li></ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"><li>• verbal and graphical instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li></ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams and sketches</li><li>• safe work procedures related to inspection, servicing and maintenance of battery storage systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR1003 Apply automotive electrical system fundamentals

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to apply basic knowledge, skills and understanding of electricity as it relates to the electrical systems, components and technologies found in modern motor vehicles.</p> <p>The unit involves the development of skills and knowledge that relate to the fundamental operating principles of electrical systems, including electrical controls; vehicle electrical systems, such as lighting, charging or control systems for engine management; and body management, including electrical accessories.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to light vehicles (cars, light commercial vehicles) and is based on knowledge of elements of electricity and basic circuit theory as well as the function, location and operation of vehicle electrical circuits, systems and components.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and apply electrical fundamentals	<p>1.1 Suitable and relevant <i>sources of information</i> are located to assist with electrical fundamentals research</p> <p>1.2 <i>Elements of electricity</i> are identified</p> <p>1.3 Elements of electricity are applied to common terminology for automotive electrical circuits, systems and components</p> <p>1.4 Elements of electricity are applied to common electrical calculations for automotive electrical circuits, systems and components</p>
2. Research and identify systems and components	<p>2.1 Component or system to be researched is identified</p> <p>2.2 Suitable and relevant sources of information are located to assist with identification of systems and components</p> <p>2.3 Reference information is researched to ensure sufficient understanding of component or system to assist with identifying how the circuit functions</p> <p>2.4 Potential for unsafe conditions or <i>safety hazards</i> is identified</p> <p>2.5 <i>Workplace health and safety (WHS) requirements</i> are applied</p>
3. Locate systems and components	<p>3.1 Suitable <i>automotive systems or components</i> are sourced to assist with task</p> <p>3.2 Location of system or component is confirmed in relation to modern vehicle configuration</p> <p>3.3 Alternative methods of system or component location are identified in relation to possible light vehicle configuration (where applicable)</p>
4. Determine method of system or component operation	<p>4.1 Appropriate <i>electrical test equipment</i> is identified and applied for the purpose of testing circuit, system or component</p> <p>4.2 System or component is examined and sub-assembly components are identified</p> <p>4.3 Operational principles of circuit, component and system functions are determined and analysed</p> <p>4.4 System or component relationship to light vehicle operation is determined</p> <p>4.5 Potential for unsafe conditions or associated risk factors with system or component operation or testing is identified</p> <p>4.6 Potential <i>common faults</i> with system or component are identified</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow written and verbal instructions
  - communicate ideas and information relating to electrical terminology and procedures verbally and in writing
  - apply questioning and active listening skills, e.g. when obtaining factual information from sources
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand workplace safety procedures
  - read and follow information in written instructions, specifications and other applicable reference documents
- planning and organising skills to:
  - identify risk factors and take action to minimise them
  - plan and organise activities that implement and follow standard procedures
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - use and communicate basic mathematical ideas and techniques that relate to automotive electrical systems and components
- self-management skills to:
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as workplace safe operating procedures
- technical skills to:
  - collect, organise and research technical information relating to:
    - recognising and reporting unsafe situations
    - automotive electrical components and systems identification, location and function
  - collect, organise and apply electrical fundamentals information and concepts
- technology skills to use information technology equipment to assist with research

#### Required knowledge

- basic electrical theory and principles of electricity, including:

**REQUIRED SKILLS AND KNOWLEDGE**

- voltage
- amperage
- circuit resistance
- alternating current (AC)
- direct current (DC)
- range of sources of information available to assist with understanding fundamental elements of electricity as they relate to automotive applications
- range of sources of information available to service, maintain and repair light vehicle electrical systems and components
- industry and workplace practice in relation to working safely in an automotive workplace
- identification, location and function of major components of common automotive:
  - engine electrical systems, including:
    - ignition systems
    - charging systems
    - starting systems
    - engine management systems
- vehicle lighting systems
- vehicle body electrical systems, including:
  - electric door locking systems
  - boot release systems
  - car stereo and sound systems
- wiring harness assembly

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- identify and apply basic electrical terminology and circuit theory
- identify automotive electrical circuits, systems and components
- source relevant technical information
- locate electrical systems and components on modern motor vehicles
- explain the function of at least three major electrical systems of a modern motor vehicle
- demonstrate basic troubleshooting techniques to determine possible causes of electrical faults or problems
- communicate effectively using technical information and terms with others involved in or affected by the work.

##### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- a workplace or simulated workplace
- technical reference information

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• a range of functioning automotive systems and components</li><li>• functioning light vehicle or vehicles</li><li>• automotive tools and equipment</li><li>• electrical test equipment</li><li>• workplace safety equipment, including personal protective equipment.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Sources of information</i></b> may include:	<ul style="list-style-type: none"> <li>• automotive electrical texts</li> <li>• vehicle workshop manuals</li> <li>• service bulletins</li> <li>• magazine technical articles</li> <li>• written instructions</li> <li>• documented workplace procedures.</li> </ul>
<b><i>Elements of electricity</i></b> may include:	<ul style="list-style-type: none"> <li>• voltage</li> <li>• current</li> <li>• resistance</li> <li>• Ohm's law</li> <li>• conventional circuit theory or circuit types.</li> </ul>
<b><i>Safety hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• electricity and water</li> <li>• electric shock</li> <li>• broken or damaged equipment</li> <li>• flammable materials and fire hazards</li> <li>• lifting practices.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective equipment (PPE)</li> <li>• safe manual handling and lifting</li> <li>• safe use of tools and equipment</li> <li>• industry codes of practice</li> <li>• worksite documentation for WHS.</li> </ul>
<b><i>Automotive systems and components</i></b> may include:	<ul style="list-style-type: none"> <li>• engine electrical systems, including:             <ul style="list-style-type: none"> <li>• ignition systems:                 <ul style="list-style-type: none"> <li>• distributors</li> <li>• coils</li> <li>• spark plugs</li> <li>• high tension leads</li> </ul> </li> <li>• charging systems:                 <ul style="list-style-type: none"> <li>• alternators</li> <li>• generators</li> <li>• voltage regulators</li> </ul> </li> <li>• starting systems:</li> </ul> </li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• starter motors</li> <li>• drives</li> <li>• relays</li> <li>• switches</li> <li>• engine management systems: <ul style="list-style-type: none"> <li>• electronic control unit (ECU)</li> <li>• engine immobilisers</li> <li>• crank angle sensors</li> <li>• mass air flow (MAF) sensors</li> <li>• throttle position sensors (TPS)</li> <li>• knock sensors</li> <li>• oxygen sensors</li> <li>• temperature sensors</li> <li>• variable valve timing (VVT) componentry (electrical)</li> </ul> </li> <li>• vehicle lighting systems: <ul style="list-style-type: none"> <li>• headlight assemblies</li> <li>• globes and bulbs</li> <li>• LEDs</li> <li>• control and tell-tale systems</li> <li>• auxiliary lighting</li> </ul> </li> <li>• vehicle body electrical systems: <ul style="list-style-type: none"> <li>• electric door and central locking systems</li> <li>• boot release systems</li> <li>• car stereo and sound systems</li> <li>• power windows</li> <li>• electric mirrors</li> <li>• electronic seat adjustment with memory</li> <li>• security systems</li> </ul> </li> <li>• wiring harness assembly</li> <li>• batteries</li> <li>• fuses and circuit breakers.</li> </ul>
<p><b><i>Electrical test equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• multimeters</li> <li>• test lamp</li> <li>• AC/DC current clamp</li> <li>• battery diagnostic equipment</li> <li>• digital scanner</li> <li>• computer with vehicle interface software</li> <li>• insulated hand tools</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• oscilloscope</li><li>• thermal imaging equipment or non-contact thermometer.</li></ul>
<i>Common faults</i> may include:	<ul style="list-style-type: none"><li>• failure to achieve ignition or power</li><li>• failure to achieve fuel flow</li><li>• flat batteries</li><li>• loss of engine power</li><li>• system or component malfunction.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR2005 Install, test and repair electrical security systems and components

### Modification History

Release	Comment
Release 1	<p>Replaces AURE219431A Install, test and repair electrical security systems/components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to carry out installation, testing and repair of aftermarket automotive electrical security systems/components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, installation, testing and repair of the systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>This standard can also be applied to installation of security systems in marine applications.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method, processes and equipment 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal safety needs, are observed throughout the work 1.4. Equipment and tooling are identified and checked for safe and effective operation 1.5. Procedures are determined to minimise task time
2. Install electrical security system components	2.1. Information is accessed from manufacturer/component supplier specifications and correctly interpreted 2.2. Components, tooling and equipment are identified, selected and prepared in accordance with site procedures 2.3. Security system/components installation procedures are carried out in accordance with site procedures and manufacturer/component supplier specifications 2.4. Legislation, industry guidelines and enterprise policies/procedures are followed 2.5. Undue damage to equipment and surrounds is avoided
3. Repair electrical security systems/components	3.1. Information for repairing electrical systems is accessed from manufacturer/component supplier specifications and correctly interpreted 3.2. Tooling and equipment are identified, selected, and prepared in accordance with site manufacturer/component supplier instructions and site procedures 3.3. Repair work is completed in accordance with site procedures 3.4. Workplace documents are completed in accordance with site requirements
4. Test electrical security systems/components	4.1. Information is accessed from manufacturer/component supplier specifications and correctly interpreted 4.2. All tests are carried out in accordance with manufacturer/component supplier specifications and tolerances 4.3. Testing is completed without causing damage to component or system
5. Clean up work area and maintain equipment	5.1. Material that can be reused is collected and stored 5.2. Waste and scrap is removed following workplace procedures 5.3. Equipment and work area are cleaned and inspected for

ELEMENT	PERFORMANCE CRITERIA
	<p>serviceable condition in accordance with workplace procedures</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</p> <p>5.6. Tooling and equipment is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for installation, testing and repairing electrical security systems/components
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications related to security system/component repairs
- questioning and active listening skills, for example when obtaining information of security systems/component procedures
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly calculate times, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform low voltage wiring/lighting system installation, testing and repair functions
- problem-solving skills for a limited range of procedural issues
- use workplace technology related to the installation and repair of automotive security systems/components, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- electrical principles and their application to security systems
- range and functions of security system componentry
- precautions to avoid side effects that could occur to ancillary systems due to installation, testing and repair operations
- installation procedures for security system components
- site repair procedures for security system components

**REQUIRED SKILLS AND KNOWLEDGE**

- types of testing and fault finding procedures
- site reporting procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- carrying out installation and repair on a minimum of two systems and/or vehicles
- testing repaired components
- testing low voltage circuitry to determine short, open or earthing faults
- applying quality standards to work
- completing essential work related housekeeping functions.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the installation and repair of automotive security systems/components
- equipment, hand and power tooling appropriate to the installation and repair of automotive security systems/components
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair

**EVIDENCE GUIDE**

	<p>Training Package</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able to be satisfied under the particular circumstance, and is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Aftermarket electrical security systems</b>	<p>Aftermarket electrical security systems may include:</p> <ul style="list-style-type: none"> <li>electrical security systems fitted to automotive or marine applications, automotive central locking systems and automotive engine immobilisers</li> </ul>
<b>Methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>reading/interpreting wiring diagrams, soldering, crimping and installing components and wiring</li> </ul>
<b>Faults</b>	<p>Faults may include:</p> <ul style="list-style-type: none"> <li>inoperative systems, open and short circuits, ground circuits</li> </ul>
<b>Critical precautions</b>	<p>Critical precautions include:</p> <ul style="list-style-type: none"> <li>manufacturer/component supplier procedures must be applied as poor working practices are likely to damage electronic system ECUs and/or other components</li> <li>installation methods and after-market security systems/components selected must be approved and within manufacturer/component supplier specifications to avoid damage and possible liability</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual</li> </ul>

<b>RANGE STATEMENT</b>	
	and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian Standards, enterprise quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling, power tooling, specialist tooling for removal, adjustment and testing equipment, including multimeters and test lamp and soldering equipment</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts, soldering consumables and fluids, and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the installation and repair of automotive security systems/components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

Unit sector	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Electrical and Electronic
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## AURETR2006 Carry out soldering of electrical wiring and circuits

### Modification History

Release	Comment
Release 1	<p>Replaces AURE224008A Carry out soldering of electrical wiring/circuits</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to carry out soldering processes appropriate to electrical components/wiring/circuits.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, soldering and testing of joints and completion of work processes, including clean-up and documentation.</p> <p>Work involves the application of solder in electrical/electronic wiring and circuitry applications.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in safety equipment, soldering techniques, environmental issues, repair procedures and vehicle operational requirements.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including job sheets, quality and quantity of material 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal protection needs, are observed throughout the work 1.4. Material for repairs and replacements are selected and inspected for quality 1.5. Correct hand and power tooling and safety equipment are selected and checked for safe use 1.6. Products are determined to minimise waste material 1.7. Procedures are identified for maximising energy efficiency while completing the job
2. Prepare components/wiring/circuits, tooling and equipment for soldering	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Materials/components to be joined are cleaned and solder/flux combinations identified 2.3. Soldering equipment is prepared/cleaned 2.4. Preparation is completed without causing damage to vehicle or component 2.5. Preparation activities are carried out according to a standard that meets industry regulations/guidelines, WHS, legislation and enterprise procedures/policies
3. Carry out soldering of components/wiring/circuits	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Soldering is completed without causing damage to vehicle or component 3.3. Soldering joint is tested prior to placing into service 3.4. Soldering activities are carried out according to a standard that meets industry regulations/guidelines, WHS, legislation and enterprise policy/procedures
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored 4.2. Waste and scrap is removed following workplace procedures 4.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures 4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace 4.5. Operator maintenance is completed in accordance with

ELEMENT	PERFORMANCE CRITERIA
	<p>manufacturer/component supplier specifications and site procedures</p> <p>4.6. Tooling is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to soldering of electrical components/wiring, work orders, plans and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to soldering of electrical wiring/circuits, including the use of soldering tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirement, equipment material and personal safety requirements
- fluxes and their application
- types of material, including solder, electrical terminals, wires and circuits
- preparation and soldering procedures
- guidelines regarding acceptable solder tolerance levels to be considered and manufacturer/component supplier specification
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstance in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, setting up, operating and maintaining heating equipment and hand tooling
- achieving soldering outcome and work quality relevant to application.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to soldering of electrical wiring/circuits
- equipment, hand and power tooling appropriate to soldering of electrical wiring/circuits
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry RS&R Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality Requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include:

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>hand tooling and soldering equipment, including electric and gas-fired torches</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>cleaning substances, flux and solder</li></ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"><li>verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li></ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>safe work procedures related to soldering of electrical wiring/circuits</li><li>engineer's design specifications and instructions</li><li>organisation work specifications and requirements</li><li>instructions issued by authorised enterprise or external persons</li><li>Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR2007 Demonstrate knowledge of automotive electrical circuits and wiring systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to demonstrate knowledge of electrical principles that enable structured testing of basic circuits in electrical systems, components and technologies found in motor vehicles.</p> <p>The unit involves applying Ohm's, Watts and Kirchhoff's laws to enable basic structured problem solving to locate a range of common faults in vehicle electrical circuits and wiring systems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments. It involves the application of knowledge of fundamental elements of electricity and vehicle electrical circuit theory and electrical wiring systems.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop knowledge of vehicle electrical circuits and wiring systems	<p>1.1.Relevant <i>sources of information</i> are located to assist with understanding of vehicle electrical circuits and wiring systems</p> <p>1.2.Knowledge of the operating principles of <i>electrical circuits</i> and <i>wiring systems</i> is developed</p>
2. Demonstrate knowledge of vehicle electrical circuits and wiring systems	<p>2.1.Knowledge of the relationship of volts, amps and ohms in a vehicle electrical circuit is applied</p> <p>2.2.Knowledge of circuit components, their function and operation in a vehicle electrical circuit is applied</p> <p>2.3.Knowledge of basic principles for testing and processes for checking a vehicle's electrical circuits and wiring systems is applied</p>
3. Demonstrate knowledge of electrical circuits as applied to vehicle fault identification	<p>3.1.Components of a vehicle's electrical circuit and wiring system are identified</p> <p>3.2.Basic electrical principles are applied to practical inspection and service activities</p> <p>3.3.Knowledge of a vehicle's electrical circuit and wiring system is practically applied when identifying potential faults</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - communicate ideas and information relating to electrical terminology and procedures verbally and in writing
  - apply questioning and active listening skills, e.g. when obtaining factual information from sources
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand workplace safety procedures
  - read and follow information in written instructions, specifications and other applicable reference documents
- numeracy skills to:
  - understand measurement, units of measure, formulae, testing and proportions
- planning and organising skills to:
  - identify risk factors and take action to minimise them
  - plan and organise activities that implement and follow standard procedures
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - use and communicate basic mathematical ideas and techniques that relate to automotive systems and components
- self-management skills to:
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as workplace safe operating procedures
- technical skills to:
  - collect, organise and understand technical information relating to:
    - identifying, locating and determining function of vehicle electrical circuit components and wiring systems
    - recognising and reporting unsafe situations
  - collect, organise and apply knowledge of vehicle electrical circuit and wiring information and concepts

## REQUIRED SKILLS AND KNOWLEDGE

- technology skills to use information technology equipment to assist with research

### Required knowledge

- principles of vehicle electrical circuits and wiring systems
- principles of electricity, including:
  - alternating current (AC)
  - direct current (DC)
  - Ohm's law
  - Watts law
  - Kirchhoff's voltage law
  - Kirchhoff's current law
- range of sources of information available to assist with understanding basic principles and elements of electricity as they relate to automotive applications
- range of sources of information available to service, maintain and repair light vehicles
- industry and workplace practice in relation to working safely in an automotive workplace
- identification, location and function of major components of common automotive:
  - engine electrical systems, including:
    - battery systems
    - ignition systems
    - charging systems
    - starting systems
  - vehicle body electrical systems, including:
    - exterior lighting systems
    - internal lighting systems
    - vehicle access systems
    - wiper and washer systems
    - vehicle entertainment systems
    - wiring harness and loom assembly

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to apply and demonstrate knowledge of:

- location of relevant sources of information on vehicle electrical circuits and wiring systems
- operating principles of electrical circuits and wiring systems
- relationship of volts, amps and ohms in a vehicle electrical circuit
- relationship of current flow and necessary wire gauge
- relationship of voltage dropping across a resistive load and the current flowing in the circuit
- circuit components, their function and operation in a vehicle electrical circuit
- testing principles and processes for checking a vehicle's electrical circuits and wiring systems.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- technical reference library with various information resources
- a range of functioning vehicle electrical circuits, components

## EVIDENCE GUIDE

	<p>and wiring systems</p> <ul style="list-style-type: none"> <li>• functioning light vehicle or vehicles</li> <li>• automotive tools and electrical test equipment.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Sources of information</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace service information</li> <li>• automotive electrical texts</li> <li>• original equipment manufacturer information</li> <li>• vehicle workshop manuals</li> <li>• service bulletins</li> <li>• magazine technical articles.</li> </ul>
<b><i>Electrical circuits</i></b> may include:	<ul style="list-style-type: none"> <li>• voltage</li> <li>• current</li> <li>• resistance</li> <li>• series circuits</li> <li>• parallel circuits</li> <li>• series and parallel circuits</li> <li>• open circuit to power, signal or ground</li> <li>• short circuit to power, signal or ground</li> <li>• high resistance to power, signal or ground.</li> </ul>
<b><i>Wiring systems</i></b> may include:	<ul style="list-style-type: none"> <li>• common multi-stand conductor</li> <li>• various wire gauges and insulation types</li> <li>• twisted pair (CAN-bus network wiring)</li> <li>• shielded wire (audio speaker wiring).</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR2008 Remove and replace electrical units and assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to remove and replace electrical units and assemblies, such as headlights, tail-lights and electrical units and assemblies that do not form an integral part of the vehicle's computer area network databus (CAN-bus) network to facilitate body repair activities or similar.</p> <p>The unit includes identifying and confirming work requirements, preparing for work, removing and replacing electrical units and assemblies, and completing work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Assistance from a licensed person must be sought in relation to air conditioning and LPG, CNG and LNG system and components and in recommissioning systems. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	Work applies to electrical units and assemblies that are fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Tools and equipment</b> are identified for effective removal, replacement and testing procedures</p>
2. Remove electrical units and assemblies	<p>2.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>2.2. <b>Electrical units and assemblies</b> are removed using approved methods, tools and equipment</p> <p>2.3. Assistance from a licensed person is sought in relation to removing air conditioning and LPG, CNG and LNG systems and components</p> <p>2.4. Removal activities are carried out according to industry and WHS regulations and guidelines, and workplace policies and procedures</p> <p>2.5. Units and assemblies are handled and stored according to manufacturer and component supplier requirements</p>
3. Replace electrical units and assemblies	<p>3.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>3.2. Electrical units and assemblies are replaced using approved methods, tools and equipment</p> <p>3.3. Assistance from a licensed person is sought in relation to replacing air conditioning and LPG, CNG and LNG system and components</p> <p>3.4. Replacement activities are carried out according to industry and WHS regulations and guidelines, and workplace policies and procedures</p>
4. Test electrical units and assemblies	<p>4.1. Carry out testing procedures of replaced electrical unit and assemblies</p> <p>4.2. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>4.3. Components or systems are checked and tested without causing damage as a result of <b>inappropriate testing procedures</b></p> <p>4.4. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>4.5. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary</p>

	repairs or adjustments 4.6. <i>Post-replacement testing</i> is conducted and results are documented according to workplace procedures
5. Clean up work area and maintain equipment	5.1. Material that can be reused is collected and stored according to workplace sustainability practices 5.2. Waste and scrap are removed following workplace procedures 5.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures 5.4. Faulty equipment is identified, tagged and isolated according to workplace procedures 5.5. Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures 5.6. Tools and equipment are maintained according to workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - recognise a workplace problem or potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to:
  - identify and describe own role and role of others
  - work with diverse individuals and groups
  - apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to removing and replacing vehicle electrical units and assemblies, including:
  - specialist tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

- electrical measuring equipment
- technology skills to:
  - operate a range of electrical diagnostic test equipment
  - use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - codes of practice
  - personal protection needs
- cable types and sizes and current carrying capacity
- various types of wiring systems found in vehicles, including:
  - basic wiring
  - twisted pair
  - shielded wiring
  - CAN-bus and databus networks
- technical information, wiring diagrams and graphic symbols relating to electrical units and assemblies
- diagnostic and testing procedures, including:
  - testing procedures for faults located in basic electrical circuits
  - analysis of system operation using basic electrical test equipment and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
  - water and moisture ingress

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- remove and replace a minimum of four units and assemblies in line with workplace, manufacturer and component supplier requirements, including:
  - one headlamp or tail lamp assembly
  - one windscreen wiper washer motor assembly
  - one door or window electrical assembly
- complete final functional test to specification
- present vehicle and equipment in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace

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	<ul style="list-style-type: none"> <li>• material relevant to removing and replacing electrical units and assemblies</li> <li>• equipment, and hand and power tools appropriate to removing and replacing electrical units and assemblies</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• effective unit and assembly removal and replacement techniques</li> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high voltage ignition systems</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters and ohmmeters</li> <li>• heat-gun or blower</li> <li>• heat shrink sleeving and flexible conduit</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• terminals and connectors</li> <li>• electrical tape.</li> </ul>
<b><i>Electrical units and assemblies</i></b> may include:	<ul style="list-style-type: none"> <li>• basic electrical units and assemblies (non CAN-bus networked), including: <ul style="list-style-type: none"> <li>• headlight assemblies</li> <li>• tail-light assemblies</li> <li>• side rear-view mirrors</li> <li>• windscreen washer and wiper motors</li> <li>• door and window motor assemblies.</li> </ul> </li> </ul>
<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• continuity testing</li> <li>• insulation testing</li> <li>• isolating possible faults</li> <li>• replacing blown fuses or circuit breakers</li> <li>• replacing damaged connectors or terminals</li> <li>• visually inspecting and evaluating components.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• open circuits</li> <li>• short circuits</li> <li>• high resistance circuits</li> <li>• damaged insulation</li> <li>• frayed wires</li> <li>• burnt wiring</li> <li>• water and moisture ingress</li> <li>• connector damage</li> <li>• terminal damage</li> <li>• diagnosis trouble codes (DTC) being set.</li> </ul>
<b><i>Post-replacement testing</i></b> may include:	<ul style="list-style-type: none"> <li>• validating effectiveness of the replacement action</li> <li>• confirming that reported fault has been rectified</li> <li>• confirming that no other faults are present as a result of the replacement action.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR2009 Install, test and repair vehicle lighting and wiring systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURE219331A Install, test and repair low voltage wiring/lighting systems</p> <p>Performance Criteria and Range Statement updated to reflect technologies</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to carry out installation, testing and repair processes to low voltage (LV) vehicle lighting and wiring systems and components.</p> <p>The unit involves identifying and confirming work requirements; preparing for work; installing, testing and repairing LV lighting systems and components; and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work applies to the installation of LV lighting and wiring systems that are fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>This work applies to the installation of a light or heavy vehicle rear lighting wiring harness that would typically be required for a vehicle towing a trailer, caravan or boat or a heavy vehicle trailer. It also includes both normal filament lamps and LED lamps that may be fitted to either the vehicle or the trailer.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS)</b> requirements are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Installation options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5. <b>Tools and equipment</b> are identified for effective installation and testing procedures</p>
2. Install and test lighting and wiring systems	<p>2.1. <b>Low voltage lighting and wiring systems</b> are installed according to manufacturer and component supplier specifications without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. Tests are carried out to determine <b>faults</b> using tools and diagnostic techniques</p> <p>2.3. Preferred <b>repair options</b> are determined and carried out</p> <p>2.4. <b>Post-repair testing</b> is carried out according to workplace procedures</p>
3. Prepare vehicle and equipment for delivery to customer after repair is completed	<p>3.1. Final inspection is made to ensure work is to workplace expectations</p> <p>3.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>3.3. Workplace documentation is processed according to workplace procedures</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored</p> <p>4.2. Waste and scrap are removed following workplace procedures</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>4.4. Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>4.5. Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures</p> <p>4.6. Tools and equipment are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - recognise a workplace problem or potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to installing and testing vehicle LV lighting and wiring systems and components, including:
  - specialist tools and equipment
  - electrical measuring equipment
- technology skills to:
  - operate a range of electrical diagnostic test equipment
  - use technology to collect, analyse and provide information

#### Required knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - codes of practice
  - personal protection needs
- wiring harness and loom fabrication techniques
- procedures for removing and replacing wiring harnesses and looms
- soldering procedures and techniques
- cable types and sizes and current carrying capacity
- various types of wiring systems found in vehicles, including:
  - basic wiring
  - twisted pair
  - shielded wiring
  - computer area network databus (CAN-bus) networks
- techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
- diagnostic and testing procedures, including:
  - testing procedures for LV lighting and wiring installations, including:
    - following manufacturer and component suppliers' test procedures
    - following original equipment manufacturer (OEM) service information
  - analysis of system operation using basic electrical test equipment and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
    - water and moisture ingress
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- read and interpret low voltage lighting wiring diagrams
- install low voltage lighting and wiring systems to specification
- retrofit LED lamps where filament lamps were originally installed
- repair low voltage lighting and wiring to specification
- test low voltage lighting and wiring to determine short circuits, open circuits, and earthing and ground faults
- test lighting wiring harness and looms and locate faults
- perform electrical connections, including crimping and soldering
- remove and replace lighting wiring harness and looms
- conduct installation according to workplace, manufacturer and component supplier requirements
- accurately interpret test results
- present vehicle and equipment in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the installation of low voltage lighting and wiring systems and components</li> <li>• equipment, and hand and power tools appropriate to: <ul style="list-style-type: none"> <li>• installing low voltage lighting and wiring components</li> <li>• retrofitting LED low voltage lighting and wiring components where filament lamps were originally fitted</li> </ul> </li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high voltage ignition systems</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters and ohmmeters</li> <li>• insulation testers</li> <li>• crimping tools</li> <li>• soldering iron</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• heat-gun or blower</li> <li>• wire and cabling of various colours and sizes</li> <li>• heat shrink sleeving and flexible conduit</li> <li>• terminals and connectors</li> <li>• electrical tape.</li> </ul>
<b><i>Low voltage lighting and wiring systems</i></b> may include:	<ul style="list-style-type: none"> <li>• basic single wiring: <ul style="list-style-type: none"> <li>• tailer wiring harness</li> <li>• driving lights wiring harness</li> <li>• side clearance lamps</li> <li>• high-mount rear brake lamps</li> <li>• ascent strip LED lamps</li> <li>• filament lamp to LED lamp replacement.</li> </ul> </li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• open circuits</li> <li>• high resistance circuits</li> <li>• short circuits</li> <li>• damaged insulation</li> <li>• frayed wires</li> <li>• burnt wiring</li> <li>• water and moisture ingress</li> <li>• connector damage</li> <li>• terminal damage</li> <li>• diagnosis trouble codes (DTC) being set as a result of LED lamp resistance being lower than original resistive filament lamp load.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• pre- and post-repair testing</li> <li>• identifying and testing components</li> <li>• diagnosing and determining faults</li> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, reassembly and adjustment procedures</li> </ul> </li> <li>• electrical measurements</li> <li>• visual and functional assessments, including for damage and wear.</li> </ul>

**RANGE STATEMENT**

*Post-repair testing* may include:

- validating effectiveness of the repair action
- confirming that reported fault has been rectified
- confirming that no other faults are present as a result of the repair action.

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR2010 Fabricate, test and repair wiring harnesses and looms

### Modification History

Release	Comment
Release 1	<p>Replaces AURE220140A Manufacture and repair wiring harness/looms</p> <p>Performance Criteria and Range Statement updated to reflect technologies</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to fabricate wiring harnesses and looms, check their continuity to specification or drawing, test for functionality, and decide preferred repair action. It also includes the removal, replacement and labelling of wiring harness and loom assemblies that are an integral part of a vehicle's electrical system.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to wiring harnesses and looms fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Tools and equipment</b> are identified for effective fabrication, testing and repair methods</p>
2. Check and test wiring harness and loom assembly	<p>2.1. <b>Wiring harness and looms</b> are visually checked to establish the extent of damage</p> <p>2.2. <b>Options for diagnosing faults</b> are used, using appropriate tools and diagnostic techniques</p> <p>2.3. Components or systems are checked without causing damage to components or systems as a result of <i>inappropriate testing procedures</i></p> <p>2.4. <b>Faults</b> are identified and preferred repair action is determined</p>
3. Remove, replace and label wiring harness and loom	<p>3.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>3.2. Wiring harness and loom are labelled and removed using tools and techniques</p> <p>3.3. Associated components are labelled, removed and tagged for storage</p> <p>3.4. Repaired and fabricated harness and loom are correctly refitted to vehicle and reconnected according to manufacturer and component supplier specifications</p> <p>3.5. Removal, replacement and labelling are completed according to industry regulations and guidelines, and WHS and workplace policies and procedures, and without causing damage to components or systems</p>
4. Repair wiring harness and loom	<p>4.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>4.2. <b>Repair options</b> are carried out using tools, diagnostic techniques and materials</p> <p>4.3. Repairs are carried out according to industry regulations and guidelines, and WHS and workplace policies and procedures</p>
5. Fabricate wiring harness and loom	<p>5.1. Electrical circuit wiring diagrams are accessed and interpreted from manufacturer and component supplier specifications</p> <p>5.2. Harness and loom are fabricated to approved specifications using tools and contemporary fabrication techniques and</p>

	<p>materials</p> <p>5.3.<b><i>Post-repair testing</i></b> of the harness and loom is conducted and results are documented according to workplace policies and procedures</p>
6. Clean up work area and maintain equipment	<p>6.1. Workplace documents are completed according to site requirements</p> <p>6.2. Material that can be reused is collected and stored</p> <p>6.3. Waste and scrap are removed following workplace procedures</p> <p>6.4. Tools, equipment and work area are cleaned, inspected for serviceable condition, and maintained according to workplace procedures</p> <p>6.5. Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>6.6. Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - recognise a workplace problem or potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to repairing vehicle wiring systems, including:
  - specialist tools and equipment
  - electrical measuring equipment
- technology skills to:
  - operate a range of electrical diagnostic test equipment
  - use technology to collect, analyse and provide information

**REQUIRED SKILLS AND KNOWLEDGE****Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - codes of practice
  - personal protection needs
- wiring harness and loom fabrication techniques
- procedures for removing and replacing wiring harness and looms
- soldering procedures and techniques
- cable types and sizes and current carrying capacity
- various types of wiring systems found in vehicles, including:
  - basic wiring
  - twisted pair
  - shielded wiring
  - databus networks
- techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
- diagnostic and testing procedures, including:
  - testing procedures for wiring harnesses and looms, including resistance and voltage drop and circuit performance checks
  - analysis of system operation using basic electrical test equipment and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
    - water and moisture ingress
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- select and use appropriate materials for fabricating, testing and repairing wiring harnesses and looms
- test wiring of harnesses and looms and locate potential faults
- remove and replace wiring harnesses and looms
- test and repair wiring harnesses and looms to manufacturer specification
- perform electrical connections, including crimping and soldering to manufacturer specification
- perform a terminal retention check following replacement of terminals in a wiring connector
- fabricate wiring harnesses.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment

**EVIDENCE GUIDE**

	<p>of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the fabrication and repair of wiring harnesses and looms</li> <li>• equipment, and hand and power tools appropriate to fabricating, testing and repairing wiring harnesses and looms</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high voltage ignition systems</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters and ohmmeters</li> <li>• insulation testers</li> <li>• crimping tools</li> <li>• soldering iron</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• heat-gun or blower</li> <li>• wire and cabling of various colours and sizes</li> <li>• heat shrink sleeving and flexible conduit</li> <li>• terminals and connectors</li> <li>• electrical tape.</li> </ul>
<b>Wiring harness and looms</b> may include:	<ul style="list-style-type: none"> <li>• basic single wiring, for example: <ul style="list-style-type: none"> <li>• tailer harness</li> <li>• driving lights harness</li> </ul> </li> <li>• complex multi-wiring with varying wire gauges</li> <li>• CAN-bus network wiring, including: <ul style="list-style-type: none"> <li>• twisted pair</li> <li>• shielded wiring.</li> </ul> </li> </ul>
<b>Options for diagnosing faults</b> may include:	<ul style="list-style-type: none"> <li>• continuity testing</li> <li>• insulation testing</li> <li>• isolation of faults</li> <li>• visual inspection and evaluation of components.</li> </ul>
<b>Inappropriate testing procedures</b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b>Faults</b> may include:	<ul style="list-style-type: none"> <li>• open circuits</li> <li>• short circuits</li> <li>• damaged insulation</li> <li>• frayed wires</li> <li>• burnt wiring</li> <li>• water and moisture ingress</li> <li>• connector damage</li> <li>• terminal damage</li> <li>• diagnosis trouble codes (DTC) being set.</li> </ul>
<b>Repair options</b> may include:	<ul style="list-style-type: none"> <li>• pre- and post-repair testing</li> <li>• identifying and testing components</li> <li>• diagnosing and determining faults</li> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, reassembly and adjustment procedures</li> </ul> </li> <li>• electrical measurements</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• peak voltage testing</li><li>• visual and functional assessments, including for damage and wear.</li></ul>
<i>Post-repair testing</i> may include:	<ul style="list-style-type: none"><li>• validating effectiveness of the repair action</li><li>• confirming that reported fault has been rectified</li><li>• confirming that no other faults are present as a result of the repair action.</li></ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR2011 Install and test basic ancillary electrical components

### Modification History

Release	Comment
Release 1	Replaces AURE219531A Install ancillary electrical components Performance Criteria and Range Statement updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to install and test basic vehicle ancillary electrical components that do not require programming procedures to connect and interface them with the vehicle computer area network databus (CAN-bus) network.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work applies to the installation and testing of basic ancillary electrical components that are fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Basic ancillary electrical components include driver interlocks; remote keyless entry and security alarm systems; audio systems; mobile phones; speed alert and navigation systems; reverse parking aids, including audible alerts and cameras; and driver gauges and instruments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Installation options</b> are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5. <b>Tools and equipment</b> are identified for effective installation and testing procedures</p>
2. Install and test fitted components	<p>2.1. <b>Basic ancillary electrical equipment</b> is installed and tested according to manufacturer and component supplier specifications without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. Tests are carried out to identify faults using tools and diagnostic techniques</p> <p>2.3. Preferred <b>repair action</b> is determined and carried out</p> <p>2.4. Post-repair testing is carried out according to workplace procedures</p>
3. Prepare vehicle and equipment for delivery to customer after repair is completed	<p>3.1. Final inspection is made to ensure work is to workplace expectations</p> <p>3.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>3.3. Workplace documentation is processed according to workplace procedures</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored</p> <p>4.2. Waste and scrap are removed following workplace procedures</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>4.4. Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>4.5. Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures</p> <p>4.6. Tools and equipment are maintained according to workplace procedure</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - recognise a workplace problem or potential problem and take action
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to installing and testing basic ancillary electrical components in vehicles, including:
  - specialist tools and equipment
  - electrical measuring equipment
- technology skills to:
  - operate a range of electrical diagnostic test equipment
  - use technology to collect, analyse and provide information

#### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements,

**REQUIRED SKILLS AND KNOWLEDGE**

including:

- codes of practice
- personal protection needs
- basic ancillary component and systems installation and testing procedures, including resistance and voltage drop and circuit performance checks
- correct cable types and sizes and current carrying capacity
- various types of wiring systems found in vehicles, including:
  - basic wiring
  - twisted pair
  - shielded wiring
  - CAN-bus networks
- techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
- diagnostic and testing procedures, including:
  - testing procedures for basic ancillary electrical installations, including:
    - following manufacturer and component suppliers' test procedures
    - following original equipment manufacturer (OEM) service information
  - analysis of system operation using basic electrical test equipment and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
    - water and moisture ingress
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- read and interpret vehicle wiring diagrams
- install basic ancillary electrical components to specification
- test basic ancillary electrical components to determine short, open, high resistance between power, signal and ground circuits
- test electrical wiring harnesses and looms and locate possible faults
- conduct installation according to workplace, manufacturer and component supplier requirements
- accurately interpret test results
- present vehicle and equipment in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment

**EVIDENCE GUIDE**

	<p>of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to the installation of basic ancillary electrical components that could be fitted to a range of vehicles</li> <li>• equipment, and hand and power tools appropriate to installing basic ancillary electrical components</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high voltage ignition systems</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Installation options</i></b> may include:	<ul style="list-style-type: none"> <li>• OEM and workplace instructions</li> <li>• equipment manufacturer and/or supplier instructions</li> <li>• aftermarket accessory instructions</li> <li>• visual inspection and evaluation of components.</li> </ul>
<b><i>Tools and equipment</i></b> may	<ul style="list-style-type: none"> <li>• hand tools</li> </ul>

**RANGE STATEMENT**

include:

- testing equipment, including multimeters and ohmmeters
- insulation testers
- crimping tools
- soldering iron
- heat-gun or blower
- wire and cabling of various colours and sizes
- heat shrink sleeving and flexible conduit
- terminals and connectors
- electrical tape.

**Basic ancillary electrical equipment** may include:

- driver interlocks
- remote keyless entry
- security alarm systems
- audio systems
- mobile phones
- speed alert systems
- navigation systems
- reverse parking aids, including sensors, audible alerts and cameras
- driver gauges and instruments.

**Inappropriate testing procedures** may include:

- intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes:
- back probing terminals and connectors and fuse holders with inappropriate test probes
  - probing terminal and connectors with inappropriate test probes
  - pushing sharp probes and objects into wiring insulation.

**Faults** may include:

- open circuits
- short circuits
- high resistance circuits
- damaged insulation
- frayed wires
- burnt wiring
- connector damage
- terminal damage
- diagnosis trouble codes (DTC) being set.

**Repair options** may include:

- pre- and post-repair testing
- identifying and testing components
- diagnosing and determining faults
- component repair procedures, including:

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• removal, replacement and adjustment procedures</li><li>• dismantle, repair, reassembly and adjustment procedures</li><li>• electrical measurements</li><li>• visual and functional assessments, including for damage and wear.</li></ul>
<i>Post-repair testing</i> may include:	<ul style="list-style-type: none"><li>• validating effectiveness of the repair action</li><li>• confirming that reported fault has been rectified</li><li>• confirming that no other faults are present as a result of the repair action.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR2012 Test and repair basic electrical circuits

### Modification History

Release	Comment
Release 1	<p>Replaces AURE218708A Carry out repairs to single electrical circuits</p> <p>Performance Criteria and Range Statement updated to reflect technologies</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to test and carry out repairs to basic electrical circuits in an automotive retail, service or repair environment. The unit also involves identifying and confirming work requirements, preparing for work, identifying faults and potential causes, repairing and replacing basic circuit components, and completing work finalisation processes, including clean-up and documentation.</p> <p>It includes replacing fuses, circuit breakers, lamps, switches, terminals and connectors; and basic wiring repairs. It includes the following fault types: open circuits, short circuits and high resistance circuits to power, signal and ground paths.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work applies to testing and repairing basic electrical circuits in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments. It applies to circuits in an automotive retail, service or repair environment.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1.<i>Workplace instructions</i> are used to determine <i>job requirements</i></p> <p>1.2.<i>Workplace health and safety (WHS) requirements</i> are observed throughout the work</p> <p>1.3.<i>Procedures and information</i> are sourced and interpreted</p> <p>1.4.<i>Tools and equipment</i> are identified for effective testing and repair procedures</p>
2. Test basic electrical circuits and identify faults	<p>2.1.<i>Basic electrical circuits</i> are visually checked to establish the extent of failure or damage, applying knowledge of electrical fundamentals</p> <p>2.2.<i>Options for diagnosing faults</i> are identified and used, using appropriate tools and diagnostic techniques</p> <p>2.3. Inspection and testing are undertaken without causing damage to components or systems as a result of <i>inappropriate testing procedures</i></p> <p>2.4.<i>Faults</i> are identified from test results and causes of faults are determined</p> <p>2.5. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Complete repairs to basic electrical circuits	<p>3.1.<i>Repair options</i> are analysed and those most appropriate are selected</p> <p>3.2. Appropriate tools, repair techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4.<i>Post-repair testing</i> is conducted and results are documented according to workplace procedures</p>
4. Prepare vehicle and equipment for delivery to customer after repair is completed	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored</p> <p>5.2. Waste and scrap are removed following workplace procedures</p>

	<p>5.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>5.4. Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>5.5. Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures</p> <p>5.6. Tools and equipment are maintained according to workplace procedures</p>
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to apply learning when testing and repairing basic electrical circuits
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document work performed
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
- planning and organising skills to ensure tasks are completed within an acceptable time frame
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technical skills to use workplace technology and tools to test and repair basic electrical circuits and components in vehicles, including:
  - specialist tools and equipment
  - electrical measuring equipment
- technology skills to:
  - operate a range of electrical diagnostic test equipment
  - use technology to collect, analyse and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material relating to testing and repairing electrical circuits, including personal safety requirements
- electrical principles, including:
  - current, voltage, resistance and power
  - series circuits
  - parallel circuits

**REQUIRED SKILLS AND KNOWLEDGE**

- series and parallel circuits
- Ohm's law
- basic electrical circuit components, including:
  - cable types and sizes and current carrying capacity
  - circuit protection devices
  - switches
  - relays
  - automotive globes
- techniques for reading and interpreting technical information, including circuit types, diagrams and symbols
- types and operation of electrical testing equipment, including:
  - digital multimeters
  - test lights and probes
- electrical measuring and testing procedures, including:
  - resistance and voltage drop tests
  - open and short circuit tests
  - inspecting for component moisture ingress and connector damage
- repair procedures of electrical circuits, including:
  - wire soldering procedures
  - terminal crimping
  - removal and replacement procedures for basic electrical components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- read and interpret circuit wiring diagrams
- test basic electrical circuits to determine short, open and high resistance between power, signal and ground paths
- demonstrate understanding of the principle of current flow in a simple circuit and voltage drop across a resistive load
- test and repair basic wiring harnesses and looms to manufacturer specifications
- perform electrical connections, including crimping and soldering to manufacturer specification
- perform a terminal retention check following replacement of terminals in a wiring connector
- accurately interpret test results
- present vehicle and equipment in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to testing and repairing basic electrical circuits and components</li> <li>• equipment, and hand and power tools appropriate to testing and repairing basic electrical circuits and components</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• testing and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high voltage ignition systems</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• identifying hazards associated with soldering processes</li> <li>• identifying hazards associated with working with vehicle supplementary restraint systems (SRS).</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• digital multimeters</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• test lights and probes</li> <li>• insulation testers</li> <li>• crimping tools</li> <li>• soldering iron</li> <li>• heat-gun or blower</li> <li>• wire and cabling of various colours and sizes</li> <li>• heat shrink sleeving and flexible conduit</li> <li>• terminals and connectors</li> <li>• electrical tape.</li> </ul>
<b>Basic electrical circuits</b> may include:	<ul style="list-style-type: none"> <li>• basic single wire circuits (non CAN-bus networked circuits)</li> <li>• door ajar switch interior courtesy light</li> <li>• battery B+ to fuse panel</li> <li>• accessory B+ to lighter or accessory socket</li> <li>• heated rear demister</li> <li>• interior lighting</li> <li>• exterior lighting</li> <li>• rear brake lighting</li> <li>• wiper and washer</li> <li>• electric engine cooling fan.</li> </ul>
<b>Options for diagnosing faults</b> may include:	<ul style="list-style-type: none"> <li>• verification of fault</li> <li>• continuity testing</li> <li>• insulation testing</li> <li>• isolation of faults</li> <li>• replacement of blown fuses</li> <li>• replacement of blown globes and lamps</li> <li>• replacement of damaged terminals and connectors</li> <li>• visual inspection and evaluation of components.</li> </ul>
<b>Inappropriate testing procedures</b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b>Faults</b> may include:	<ul style="list-style-type: none"> <li>• open circuits</li> <li>• high resistance circuits</li> <li>• short circuits</li> <li>• damaged insulation</li> <li>• frayed wires</li> <li>• burnt wiring</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"> <li>• water and moisture ingress</li> <li>• connector damage</li> <li>• terminal damage</li> <li>• diagnosis trouble codes (DTC) being set.</li> </ul>
<i>Repair options</i> may include:	<ul style="list-style-type: none"> <li>• pre- and post-repair testing</li> <li>• identifying and testing components</li> <li>• diagnosing and determining faults</li> <li>• component repair procedures, including:               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, reassembly and adjustment procedures</li> </ul> </li> <li>• electrical measurements</li> <li>• visual and functional assessments, including for damage and wear.</li> </ul>
<i>Post-repair testing</i> may include:	<ul style="list-style-type: none"> <li>• validating the effectiveness of the repair action</li> <li>• confirming that reported fault has been rectified</li> <li>• confirming that no other faults are present as a result of the repair action.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR2013 Inspect and service charging systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to inspect and service charging systems fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>The unit involves testing charging systems, identifying likely faults and potential causes, inspecting abnormal operation, servicing complete assemblies or components of a vehicle's charging system, and carrying out basic charging system test procedures.</p> <p>It also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies to charging systems fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to test vehicle charging system	<p>1.1. <i>Workplace instructions</i> are used to determine <i>job requirements</i></p> <p>1.2. <i>Workplace health and safety (WHS) requirements</i> are observed and applied throughout the work</p> <p>1.3. <i>Procedures and information</i> are sourced and interpreted</p> <p>1.4. <i>Tools and equipment</i> are identified for effective inspection and servicing methods</p>
2. Test vehicle charging system	<p>2.1. <i>Charging systems</i> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <i>inappropriate testing procedures</i></p> <p>2.2. <i>Faults</i> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Service vehicle charging system	<p>3.1. <i>Service options</i> are analysed and those most appropriate are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Service adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications without causing damage to components or systems</p> <p>3.4. <i>Post-service testing</i> is carried out according to workplace procedures</p>
4. Prepare vehicle for delivery to customer	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Service schedule documentation is completed according to workplace procedures</p>
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and work area are cleaned and inspected according to workplace procedures</p> <p>5.4. Tools and equipment are maintained according to workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures 5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to apply learning when inspecting and servicing vehicle charging systems
- learning skills to identify sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - document work performed during inspection and servicing operations
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
- problem-solving skills to:
  - seek information and assistance as required to solve problems
  - refer problems outside area of responsibility to appropriate person and suggest possible fault causes and problem solutions
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to:
  - operate basic automotive test equipment
  - use tools and equipment relating to servicing charging systems
  - use technology to collect, analyse and provide information

#### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements when working with vehicle while either on a hoist, trolley jack or safety stand, including:
  - codes of practice
  - personal protection needs when working on vehicles in an automotive workshop
- application, purpose and operation of charging systems
- principal types of vehicle charging systems
- techniques for reading and interpreting automotive technical information, graphic symbols and wiring diagrams

**REQUIRED SKILLS AND KNOWLEDGE**

- methods of sourcing information relevant to inspecting and servicing charging systems
- inspection procedures, including:
  - servicing procedures for charging systems, including accessing and interpreting service information
  - analysis of system operation using electrical test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
- servicing procedures, including:
  - component identification and electrical testing procedures
  - component and associated system adjustment

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- complete preparatory activity in a systematic manner
- inspect and service a range of charging systems
- conduct inspection and service procedures according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements
- complete workplace and equipment documents
- clean up work area and maintain equipment to workplace standards.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with charging faults
- equipment appropriate for the testing of charging systems

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• specifications and workplace instructions</li><li>• tools appropriate for the inspection, servicing and adjustment of vehicle charging systems.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• charging system inspection and servicing methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace first aid equipment</li> <li>• workplace safety policies and procedures</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• personal protective clothing and equipment</li> <li>• use of fire-fighting equipment</li> <li>• safe handling of material</li> <li>• safe use of tools and equipment.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• vehicle service schedules and repair manuals relating to vehicle charging systems</li> <li>• safe work procedures relating to inspecting and servicing vehicle charging systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• vehicle lifting devices</li> <li>• power and air tools</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• electronic testing equipment, including: <ul style="list-style-type: none"> <li>• multimeter</li> <li>• test light</li> <li>• load tester</li> <li>• inductive ammeter.</li> </ul> </li> </ul>
<b><i>Charging systems</i></b> may include:	<ul style="list-style-type: none"> <li>• alternators: <ul style="list-style-type: none"> <li>• electromagnetic</li> <li>• permanent magnets</li> </ul> </li> <li>• generators</li> <li>• internal and external regulation</li> <li>• battery-sensed and machine sensing regulation</li> <li>• 6V,12V and 24V operation</li> <li>• dynastart and mechanical regulation</li> <li>• belt and direct drive, single and multiple belt drive and adjustable tensioning devices</li> <li>• single phase, half-wave rectified and full-wave rectified <ul style="list-style-type: none"> <li>• solar systems, including: <ul style="list-style-type: none"> <li>• single and ganged panels</li> <li>• internal and external regulation</li> <li>• battery sensed and machine sensing regulation</li> <li>• 6V, 12V and 24V operation</li> </ul> </li> </ul> </li> <li>• solid state controlled.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• component malfunction, including: <ul style="list-style-type: none"> <li>• system not charging</li> <li>• alternator drive problems</li> <li>• regulator malfunction</li> </ul> </li> <li>• noisy operation</li> <li>• seized mechanical components</li> <li>• worn mechanical components</li> <li>• overrunning clutch pulley faulty</li> <li>• control circuit faults</li> <li>• open or short circuits to power, ground and reference circuits</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• high circuit resistance</li><li>• diagnosis trouble codes (DTC) being set.</li></ul>
<i>Service options</i> may include:	<ul style="list-style-type: none"><li>• inspection procedures</li><li>• drive belt adjustment</li><li>• diagnose and repair considerations and procedures.</li></ul>
<i>Post-service testing</i> may include:	<ul style="list-style-type: none"><li>• validating effectiveness of the inspection and servicing actions</li><li>• confirming that inspection and service actions have been completed</li><li>• confirming that further diagnosis findings are reported to responsible service personnel.</li></ul>
<i>Service schedule documentation</i> may include:	<ul style="list-style-type: none"><li>• vehicle service book</li><li>• electronic or handwritten workplace records and invoices.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR2014 Inspect and service starting systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to inspect and service complete assemblies or components of a vehicle's starting system fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>The unit involves identifying and confirming work requirements, preparing for work, carrying out basic starting system test procedures, identifying likely faults and potential causes, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies to starting systems fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to test vehicle starting system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Tools and equipment</b> are identified for effective inspection and servicing methods</p>
2. Test vehicle starting system	<p>2.1. <b>Starting systems</b> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Service vehicle starting system	<p>3.1. <b>Service options</b> are analysed and those most appropriate are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Service adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications without causing damage to components or systems</p> <p>3.4. <b>Post-service testing</b> is carried out according to workplace procedures</p>
4. Prepare vehicle for delivery to customer	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. <b>Service schedule documentation</b> is completed according to workplace procedures</p>
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and work area are cleaned and inspected according to workplace procedures</p> <p>5.4. Tools and equipment are maintained according to workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures 5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to apply learning when inspecting and servicing vehicle starting systems
- learning skills to identify sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - document work performed during inspection and servicing operations
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
- problem-solving skills to:
  - seek information and assistance as required to solve problems
  - refer problems outside area of responsibility to appropriate person and suggest possible fault causes and problem solutions
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to:
  - operate basic automotive test equipment
  - use tools and equipment relating to servicing starting systems
  - use technology to collect, analyse and provide information

#### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety requirements when working with vehicle while either on a hoist, trolley jack or safety stand, including:
  - codes of practice
  - personal protection needs when working on vehicles in an automotive workshop
- application, purpose and operation of starting systems
- principal types of starting systems
- techniques for reading and interpreting automotive technical information, graphic symbols and wiring diagrams

**REQUIRED SKILLS AND KNOWLEDGE**

- methods of sourcing information relevant to inspecting and servicing starting systems
- inspection procedures, including:
  - servicing procedures for starting systems, including accessing and interpreting service information
  - analysis of system operation using electrical test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
- servicing procedures, including:
  - component identification and electrical testing procedures
  - component and associated system adjustment

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- complete preparatory activity in a systematic manner
- inspect and service a range of starting systems
- conduct inspection and service procedures according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements
- complete workplace and equipment documents
- clean up work area and maintain equipment to workplace standards.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with starting faults relevant to the qualification being sought

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• equipment appropriate for testing starting systems</li><li>• specifications and workplace instructions</li><li>• tools appropriate for inspecting, servicing and adjusting vehicle starting systems.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• starting system inspection and servicing methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace first aid equipment</li> <li>• workplace safety policies and procedures</li> <li>• safe handling of material</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• personal protective clothing and equipment</li> <li>• use of fire-fighting equipment</li> <li>• safe use of tools and equipment.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• vehicle service schedules and repair manuals relating to vehicle starting systems</li> <li>• safe work procedures relating to inspecting and servicing vehicle starting systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• vehicle lifting devices</li> <li>• power and air tools</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"> <li>• electronic testing equipment, including: <ul style="list-style-type: none"> <li>• multimeter</li> <li>• test light</li> <li>• load tester</li> <li>• inductive ammeter.</li> </ul> </li> </ul>
<i>Starting systems</i> may include:	<ul style="list-style-type: none"> <li>• dynastart</li> <li>• inertia</li> <li>• pre-engaged</li> <li>• axial and coaxial</li> <li>• fixed and remote solenoid</li> <li>• direct drive</li> <li>• gear reduction</li> <li>• protection lockout</li> <li>• inhibitor switch</li> <li>• series-parallel switching</li> <li>• battery isolation switch</li> <li>• single or multiple battery system</li> <li>• permag starter motors.</li> </ul>
<i>Inappropriate testing procedures</i> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<i>Faults</i> may include:	<ul style="list-style-type: none"> <li>• component malfunction, including: <ul style="list-style-type: none"> <li>• low battery voltage</li> <li>• discharged battery</li> <li>• excessive voltage drop</li> </ul> </li> <li>• noisy operation</li> <li>• seized mechanical components</li> <li>• worn mechanical components</li> <li>• failure to engage drive pinion</li> <li>• control circuit faults</li> <li>• open or short circuits to power, ground and reference circuits</li> <li>• high circuit resistance</li> <li>• diagnosis trouble codes (DTC) being set.</li> </ul>
<i>Service options</i> may include:	<ul style="list-style-type: none"> <li>• inspection procedures</li> <li>• control circuit testing</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• solenoid clutch activation</li><li>• cranking circuit voltage drop test.</li></ul>
<i>Post-service testing</i> may include:	<ul style="list-style-type: none"><li>• validating effectiveness of the inspection and servicing actions</li><li>• confirming that inspection and service actions have been completed</li><li>• confirming that further diagnosis findings are reported to responsible service personnel.</li></ul>
<i>Service schedule documentation</i> may include:	<ul style="list-style-type: none"><li>• vehicle service book</li><li>• electronic or handwritten workplace records and invoices.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR2015 Inspect and service batteries

### Modification History

Release	Comment
Release 1	Replaces AURE218670A Service, maintain or replace batteries Performance Criteria and Range Statement updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect and service batteries.</p> <p>The unit involves identifying and confirming work requirements, preparing for work, testing batteries, analysing test results, servicing and maintaining batteries, and completing work finalisation processes, including clean-up and documentation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect battery	<p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b>, including state and territory regulatory requirements, and <b>personal protective equipment (PPE)</b> needs, are observed throughout the work</p> <p>1.3. <b>Safe operating procedures</b> and information are sourced</p> <p>1.4. Technical requirements necessary for inspection are sourced, and tools, <b>equipment</b> and <b>materials</b> are identified and prepared</p>
2. Test battery	<p>2.1. Test methods are implemented according to workplace procedures and manufacturer and component supplier specifications</p> <p>2.2. Test results are compared with manufacturer and component supplier specifications</p> <p>2.3. Results are documented with evidence, and supporting information is recorded</p> <p>2.4. Test results and findings are communicated to the appropriate workshop personnel for replacement or repair action</p>
3. Carry out service and maintenance to battery	<p>3.1. <b>Service and maintenance methods</b> are carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.2. Electrolyte levels are checked and topped up where appropriate according to service and maintenance methods</p> <p>3.3. Battery terminals and connection to vehicle wiring are inspected</p> <p>3.4. Condition is reported to persons responsible for repair action</p> <p>3.5. Batteries and terminals are cleaned according to service and maintenance methods</p>
4. Prepare vehicle and equipment for delivery to customer after service is completed	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and maintain equipment	<p>5.1. Work schedule and job card documentation are completed</p> <p>5.2. Equipment and work area are cleaned and inspected for</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>serviceable condition according to workplace procedures</p> <p>5.3.Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>5.4.Tools and equipment are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - communicate basic information relating to battery safety
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - participate in self-improvement activities
  - recognise a workplace problem or potential problem
- literacy skills to:
  - read and interpret technical information relating to recognising and reporting unsafe situations
  - read, understand and follow battery inspection and maintenance information
  - read, understand and follow information on standard operating procedures and repair guidelines
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired battery performance
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities that implement standard workplace procedures
- problem-solving skills to refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - locate and identify appropriate tools and equipment
  - locate technical information
  - recognise limitations and seek timely advice
- teamwork skills to:
  - work with others and in a team by cooperating with team members
  - work with diverse individuals and groups
- technical skills to:
  - select tools and equipment appropriate to inspecting, servicing and maintaining batteries in light and heavy vehicles, mobile plant and mining vehicles
  - use battery servicing and testing tools and equipment safely
  - maintain tools and equipment using appropriate techniques and standard operating procedures
- technology skills to use workplace technology to:

**REQUIRED SKILLS AND KNOWLEDGE**

- assist with work practices
- inspect, service and maintain battery storage systems, including use of specialist tools, measuring equipment and communication devices
- report and document inspection and servicing results

**Required knowledge**

- WHS and environmental regulations, requirements, equipment, material and personal safety requirements to ensure batteries are maintained, handled and disposed of in an environmentally sustainable manner
- battery service and maintenance procedures
- battery testing methods
- dangers of working with battery testing equipment
- operating principles and layout of vehicle battery storage systems
- original equipment manufacturer (OEM) specific procedures for inspecting maintenance-free batteries
- workplace quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- inspect, service and maintain battery storage systems in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments according to manufacturer and component supplier and site requirements
- inspect, service and maintain at least three different types of batteries according to manufacturer and site requirements
- complete workplace documents.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace that best reflects a light or heavy vehicle service facility or environment
- material relevant to inspecting, servicing and maintaining

**EVIDENCE GUIDE**

	<p>battery storage systems</p> <ul style="list-style-type: none"><li>• equipment, and hand and power tools appropriate to servicing and maintaining batteries</li><li>• specifications and work instructions.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• safe use of tools and equipment</li> <li>• safe handling of potentially hazardous material and substances</li> <li>• use of fire-fighting equipment</li> <li>• first aid training and response</li> <li>• control of hazards and hazardous materials.</li> </ul>
<b><i>Personal protective equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• safety glasses</li> <li>• protective clothing</li> <li>• gloves.</li> </ul>
<b><i>Safe operating procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• conducting operational risk assessment</li> <li>• treatments associated with vehicle movement</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• procedures for working in proximity to others and site visitors.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• load testing devices</li> <li>• hydrometer</li> <li>• multimeter.</li> </ul>
<b><i>Materials</i></b> may include:	<ul style="list-style-type: none"> <li>• battery consumables</li> <li>• cleaning materials.</li> </ul>
<b><i>Service and maintenance methods</i></b> may include:	<ul style="list-style-type: none"> <li>• inspecting battery and leads</li> <li>• inspecting battery securing system</li> <li>• cleaning battery and battery compartments</li> <li>• topping battery fluid</li> <li>• testing battery with a hydrometer.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

# AURETR2016 Read and apply vehicle wiring schematics and drawings

## Modification History

Release	Comment
Release 1	New unit of competency

## Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to read and apply information from vehicle wiring schematics and drawings in an automotive retail, service and repair environment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

Application of the unit	<p>Work applies to reading and applying vehicle wiring schematics and drawings applicable to the diagnosis and repair of electrical faults in light and heavy vehicle, plant and equipment, motorcycles and marine craft.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Wiring schematics and drawings</b> that relate to the vehicle being serviced or repaired are sourced</p> <p>1.4. Wiring schematics and drawings are checked to ensure that latest amendments and version are relevant for the vehicle being diagnosed and repaired</p> <p>1.5. Knowledge of electrical fundamentals is applied</p>
2. Read and apply information from vehicle wiring schematics and drawings	<p>2.1. Circuit symbols, wiring codes, legends and diagrammatic representations are correctly identified and interpreted</p> <p>2.2. Information is interpreted and drawings of vehicle wiring schematics are applied to testing and repair procedures</p> <p>2.3. Technical information located in workshop wiring schematics, circuits and drawings is applied to assist when carrying out testing and repair procedures</p>
3. Finalise work and clean up	<p>3.1. Vehicle wiring schematics and drawings and vehicle specifications are stored appropriately to protect from damage and ensure ready access and appropriate version control of information</p> <p>3.2. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>3.3. Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>3.4. Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures</p> <p>3.5. Tools and equipment are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when reading and applying vehicle wiring schematics and drawings
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- technical skills to use workplace technology to assist in reading and applying vehicle wiring schematics and drawings when diagnosing and repairing vehicles, including:
  - specialist equipment
  - electrical measuring equipment
- technology skills to use tools and equipment to collect, analyse and provide information

#### Required knowledge

- relevant WHS and environmental regulations, standards, codes of practice, and workplace policies and procedures needed to carry out work in a manner that ensures the safety of people,

**REQUIRED SKILLS AND KNOWLEDGE**

- equipment and the environment
- vehicle wiring schematics, service manuals, drawings, circuits or specifications of vehicles, plant, tools, equipment and systems
- procedures for amending and maintaining version control status of appropriate vehicle wiring schematics and drawings, particularly as applied to the vehicle being diagnosed and repaired
- established communication channels and protocols
- quality standards applicable to maintenance of service information
- procedures for recording, reporting and maintaining workplace records and information

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- read and apply circuit wiring schematics and diagrams
- confirm that amendment and version control status is current and is the latest revision of service information for the work being performed
- use sourced information to accurately interpret test results.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- wiring schematics and drawings relevant to testing and repairing basic electrical circuits and components
- equipment, and hand and power tools appropriate to testing and repairing basic electrical circuits and components

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• reading, interpreting and applying vehicle wiring schematics and drawings</li> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Wiring schematics and drawings</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• vehicle wiring schematics</li> <li>• electrical component symbols</li> <li>• electrical operational block schematics</li> <li>• vehicle zoning information tables</li> <li>• electrical component drawings</li> <li>• connector drawings, including connector end view drawings</li> <li>• electrical installation instructions and wiring diagrams</li> <li>• vehicle service requirements and repair manuals.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR2035 Demonstrate knowledge of petrol and diesel engine operation

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to demonstrate knowledge of petrol and diesel engine components and systems, as well as of principles of engine operation and performance that enables an automotive electrician to understand engine operation when diagnosing faults in motor vehicles.</p> <p>The unit involves carrying out basic structured problem-solving techniques relating to electrical components and systems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments. Electrical components and systems are integral parts of petrol and diesel engines.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify resources	<ul style="list-style-type: none"><li>1.1. <b><i>Sources of information</i></b> are located to assist with understanding petrol and diesel engine system operation and performance</li><li>1.2. Relevance of information to engine type, and system operation and performance is confirmed</li></ul>
2. Apply knowledge of engine operation	<ul style="list-style-type: none"><li>2.1. Understanding of the operating principles of <b><i>petrol and diesel engine operation</i></b> is developed</li><li>2.2. Knowledge of <b><i>engine components</i></b>, their function and operation in a petrol and diesel engine is applied</li><li>2.3. Knowledge of the <b><i>relationship</i></b> that a four-stroke cycle petrol and diesel engine has with the vehicle's ignition, starting, air and fuel delivery and cooling system is applied</li></ul>
3. Apply fault identification to engine performance	<ul style="list-style-type: none"><li>3.1. Components of petrol and diesel engines are identified</li><li>3.2. Engine principles are applied to vehicle inspection and service activities</li><li>3.3. Basic fault-finding procedures are performed on petrol and diesel engines</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - communicate ideas and information relating to petrol and diesel engine terminology and procedures (verbal and written)
  - clarify workplace instructions and determine job requirements
  - apply questioning and active listening skills to obtain factual information from sources
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - understand technical information relating to engine operation
  - read and follow information in written instructions, specifications and other reference documents
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - use and communicate basic mathematical ideas and techniques that relate to automotive systems and components
- self-management skills to:
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as workplace safe operating procedures
- technical skills to:
  - collect, organise and understand technical information relating to:
    - recognising and reporting unsafe situations
    - petrol and diesel engine component and system identification, location and function
  - collect, organise and apply knowledge of information and concepts relating to petrol and diesel engine operation
- technology skills to use information technology equipment to assist with research

#### Required knowledge

- classifications of engines, including:
  - internal combustion
  - reciprocating and rotary engines
  - spark ignition and compression ignition engines
  - engine cylinder arrangements
- engine configurations, including:

**REQUIRED SKILLS AND KNOWLEDGE**

- inline engines, vee-type engines and slant cylinder engines
- opposed cylinder engines
- camshaft and valve locations, including:
  - overhead cam (OHC)
  - overhead valve (OHV)
- engine operating principles, including:
  - two-stroke cycles
  - four-stroke cycles
- combustion, including:
  - air-fuel ratios and flame propagation
  - direct and indirect fuel injection
  - detonation and pre-ignition
- engine measurement and performance, including:
  - bore and stroke
  - swept volume and engine volume
  - compression ratio
  - engine efficiency
- torque and horsepower, including brake horsepower
- operation of petrol engines, including:
  - engine components, including cylinder blocks, cylinders, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, spark plugs, connecting rods, crankshafts, piston rings, gudgeon pins, camshafts, cams and flywheels
- operation of diesel engines, including:
  - direct and indirect injection
  - swirl chambers
  - pre-combustion chambers

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to apply and demonstrate knowledge of:

- location of relevant sources of information on petrol and diesel engine components, systems and principles of operation
- operating principles of petrol and diesel engine systems and components
- various engine types and layouts in petrol and diesel powered vehicles
- relationship that a four-stroke cycle petrol and diesel engine has with the vehicle's ignition, starting, air and fuel delivery and cooling systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- technical reference library with various information resources
- a range of engine components, systems and assemblies
- a range of petrol and diesel engine types and configurations mounted on an engine stand for ease of viewing
- functioning light vehicle or vehicles

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• automotive tools and test equipment</li><li>• personal protective equipment and workplace safety equipment.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Sources of information*** may include:

- workplace service information
- automotive engine mechanical texts
- vehicle workshop manuals
- service bulletins
- magazine technical articles.

***Petrol and diesel engine operation*** may include:

- engine construction
- engine types and configuration
- two-stroke and four-stroke
- cycles of engine operation, including:
  - intake stroke
  - compression stroke
  - power stroke
  - exhaust stroke
- firing order
- ignition types, including:
  - spark
  - compression
- engine mounting location, including:
  - front longitudinal
  - front transverse
  - mid transverse
- measurement and performance, including:
  - bore and stroke
  - displacement
  - compression ratio
  - engine efficiency
  - torque versus horsepower.

***Engine components*** may include:

- top of engine, including:
  - timing belt or chain
  - camshaft timing pulley
  - camshaft single and dual
  - rocker arms and shafts

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• intake valves and springs</li> <li>• exhaust valves and springs</li> <li>• cylinder head</li> <li>• front of engine, including: <ul style="list-style-type: none"> <li>• crankshaft</li> <li>• crankshaft timing pulley</li> <li>• crankshaft pulley and balancer</li> </ul> </li> <li>• rear of engine, including: <ul style="list-style-type: none"> <li>• flywheel</li> <li>• starter ring gear</li> </ul> </li> <li>• bottom of engine, including: <ul style="list-style-type: none"> <li>• engine block</li> <li>• crankshaft</li> <li>• crankshaft balance weights</li> <li>• crankshaft main bearing journals</li> <li>• pistons</li> <li>• connecting rods.</li> </ul> </li> </ul>
<b><i>Relationships</i></b> may include:	<ul style="list-style-type: none"> <li>• ignition system: <ul style="list-style-type: none"> <li>• ignition timing</li> <li>• top dead centre (TDC)</li> <li>• electrical sensors</li> <li>• spark plugs</li> <li>• glow plugs</li> <li>• fuel injectors</li> <li>• knock sensors</li> </ul> </li> <li>• starter motor system</li> <li>• charging system</li> <li>• coolant temperature sensor</li> <li>• air intake</li> <li>• fuel delivery</li> <li>• exhaust emission</li> <li>• engine oil lubrication system.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR2042 Remove, refit and test electrical componentry for operation following body repair activities

### Modification History

Release	Comment
Release 1	Replaces AURE218764A Remove, refit and test electrical componentry for normal operation following body repair activities Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to test for normal operation electrical componentry which is incidental to body repair activities, such as rear vision mirrors, telephone and radio antennas, central locking systems, air bag sensors, air bag actuators and deployment systems, rain sensors, light sensors, alarm components, batteries and computer control units.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information on electrical componentry in motor vehicles	<p>1.1.Customer requirements are checked following workplace procedures</p> <p>1.2.Work instructions are used to determine job requirements, including method, material and equipment</p> <p>1.3.WHS requirements, including handling of broken glass, dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work</p> <p>1.4.Tooling and equipment are checked prior to use, for conformity with specifications and safe use</p> <p>1.5.Condition of system is determined by visual, aural and tactile inspections and measurements</p> <p>1.6.Conditions found are compared with electrical componentry in motor vehicles system specifications and customer use requirements</p> <p>1.7.Correct information is accessed and interpreted from manufacturer/component supplier specifications</p>
2. Plan operations where electrical components are incidental to a body repair activity	<p>2.1.Planned operation sequence and availability of tooling and equipment is determined</p> <p>2.2.Planned operation sequence includes post-service testing and checking procedure</p> <p>2.3.Material list is prepared and availability determined</p> <p>2.4.Tooling and equipment are selected to meet job requirements</p> <p>2.5.Tooling and equipment are regularly checked to ensure they are in good working order</p> <p>2.6.Tooling and equipment are handled in accordance with WHS requirements</p> <p>2.7.Daily maintenance of tooling is performed as specified by enterprise</p>
3. Remove electrical/ electronic operated components	<p>3.1.Removal or relocation of electrically operated componentry is completed without causing damage to component or system</p> <p>3.2.Correct information is accessed and interpreted from manufacturer/component supplier specifications</p> <p>3.3.Electrically operated components are removed using approved methods, tooling and equipment</p> <p>3.4.Removal activities are carried out according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies</p>

ELEMENT	PERFORMANCE CRITERIA
4. Refit and/or test electrically operated componentry involved in body repair activities	<ul style="list-style-type: none"><li>4.1. Customer requirements and electrical componentry specifications are checked following incidental body repair activities</li><li>4.2. Electrically operated units/components are refitted using approved methods, tooling and equipment</li><li>4.3. Electrically operated componentry is operated through its full range after a body repair activity, noting test results, including non-conformity</li><li>4.4. Electrically operated componentry and adjustments are checked and prepared for delivery after a body repair activity</li><li>4.5. Portable tooling and equipment are stored in approved designated areas</li><li>4.6. Workplace documents, customer file and warranty information is updated, as required</li></ul>

## Required Skills and Knowledge

### EQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to working with and testing of electrical componentry following body repair activities
- communicate ideas and information to customers and supervisors related to working with and testing of electrical componentry following body repair activities
- plan and organise activities related to working with and testing of electrical componentry involved in body repair activities
- work with others and in a team by seeing and conveying information related to planning, sequencing and completion of the task
- use mathematical ideas and techniques to count and measure
- establish diagnostic processes which identify methods of solving problems related to working with and testing of electrical componentry following body repair activities
- use workplace technology related to working with and testing of electrical componentry involved in body repair activities

#### Required knowledge

- purpose and requirements of electrical componentry in motor vehicles
- material used in electrical componentry
- use of tooling and equipment
- application of mechanical principles
- classification of electrical componentry in motor vehicles and identification of systems
- electrical terminology
- circuit types and how to test them
- test functions of a multimeter
- use of a LED test lamp
- types and uses of various automotive fuses

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspect of:

- test of electrical componentry in motor vehicles.

#### Context of, and specific resources for assessment

Underpinning knowledge and skills may be assessed on or off the job.

Assessment of practical skills must take place after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

Prescribed outcomes must be able to be achieved without direct supervision.

The following resources should be made available:

- specific service and general workshop equipment and tooling
- enterprise documentation
- vehicles with a range of commonly encountered electrical components
- vehicles fitted with air bags
- job cards
- multimeter.

#### Method of assessment

Practical assessments:

- gather information on technology related to testing of electrical componentry following body repair activities
- plan working with and testing of electrical componentry following body repair activities
- test electrical componentry following body repair activities
- accurately complete job card, including listing of parts and consumables used and labour hours.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Unit scope</b>	<p>This unit of competence applies to, but is not limited to:</p> <ul style="list-style-type: none"> <li>rear window and windscreen demisters, electrically operated windows, central locking, rear vision mirror adjustments and/or heating, telephone and radio antennas, air bag sensors, air bag actuators and deployment systems, rain sensors and light sensors</li> </ul>
<b>Repair methods</b>	<p>Repair methods include</p> <ul style="list-style-type: none"> <li>on-and-off site body repair activity</li> <li>removal, refitting and adjustment of electrical componentry</li> <li>testing for normal operation of electrical componentry following related body repair</li> <li>communicating with customers</li> <li>documenting and reporting on service</li> </ul> <p>Specific requirements may include:</p> <ul style="list-style-type: none"> <li>a range of electrical componentry available for testing</li> <li>removal and refitting of battery, including use of spike protection and memory retention devices</li> </ul>
<b>WHS requirements</b>	<p>WHS practices must abide by:</p> <ul style="list-style-type: none"> <li>state/territory/industry WHS</li> <li>award provisions</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>manufacturer/component supplier specifications</li> <li>enterprise operating procedures</li> <li>product manufacturer/component supplier specifications</li> <li>customer requirements</li> <li>industry/workplace codes of practice</li> </ul>

## Unit Sector(s)

Unit sector	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Electrical and Electronic
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## AURETR3017 Overhaul charging system alternators

### Modification History

Release	Comment
Release 1	Replaces AURE319145A Overhaul charging system alternators Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to overhaul automotive charging system alternators, including starting motors and alternators, as fitted to vehicles, plant and equipment, motorcycles and marine equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing of alternators and identification of faults/causes, disassembly, overhaul, reassembly and retesting of alternators and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method, processes and equipment 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal safety needs, are observed throughout the work 1.4. Equipment and tooling are identified and checked for safe and effective operation 1.5. Procedures are determined to minimise task time
2. Dismantle alternator and clean individual components/parts	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Alternators are dismantled according to component/vehicle manufacturer/component supplier procedures 2.3. Alternators are dismantled without causing damage to components 2.4. Component parts are cleaned according to unit/vehicle manufacturer/component supplier recommended solvents and procedures 2.5. Work is completed according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies
3. Inspect and test alternator components/parts	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Alternator are inspected and tested according to component/vehicle manufacturer/component supplier specifications 3.3. Alternators component parts are inspected and tested without causing damage to component or system 3.4. Worn, damaged, deteriorated or faulty components/parts are identified 3.5. Part requirements are documented and reported according to enterprise procedures 3.6. Inspection and testing is carried out according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies
4. Overhaul and reassemble alternator and components/parts	4.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 4.2. Alternator parts/components are repaired to manufacturer/component supplier specifications 4.3. Alternator replacement parts are selected and fitted to meet

ELEMENT	PERFORMANCE CRITERIA
	<p>customer requirements</p> <p>4.4.Alternators are reassembled according to unit/vehicle manufacturer/component supplier specifications</p> <p>4.5.Alternators are reassembled without causing damage to components/parts</p> <p>4.6.Alternators are assembled according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies</p> <p>4.7.Alternators are tested according to component/vehicle manufacturer/component supplier specifications</p> <p>4.8.Workplace and equipment documents are completed in accordance with site requirements</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored</p> <p>5.2.Waste and scrap is removed following workplace procedure</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</p> <p>5.6.Tooling and equipment is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for the overhaul of automotive alternators
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information of alternator overhaul procedures
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete tests and measurements to determine serviceability of alternator component parts
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform alternator overhaul and component testing and repair/replacement procedures
- problem-solving skills for a range of procedural issues
- use workplace technology related to the overhaul of charging system alternators, the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirement, equipment, material and personal safety requirements
- alternator operating principles
- construction and operation of alternators and components relevant to application
- types and layout of service/repair manuals (hard copy and electronic)
- component cleaning, inspection and testing procedures
- dismantling and assembling/overhaul procedures
- unit assembly test procedures
- work organisation and planning processes

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- cleaning, testing, inspecting and evaluating components of units
- overhauling units, including dismantling and reassembling units to manufacturer/component supplier requirements
- repairing/replacing component parts to manufacturer/component supplier requirements
- testing final product for return to service
- completing workplace and equipment documents.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the overhaul of charging system alternators
- equipment, hand and power tooling appropriate to the overhaul of charging system alternators
- activities covering mandatory task requirements

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry RS&amp;R Training Package</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li> <li>• Assessment may be applied under project related conditions and require evidence of process</li> <li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electrical system alternators and components</b>	Electrical system alternators and components may be fitted to vehicles, plant and equipment, motorcycles and marine equipment
<b>Faults</b>	<p>Faults may include:</p> <ul style="list-style-type: none"> <li>alternator not charging, noisy operation, open circuits, short circuits and earthing</li> </ul>
<b>Overhaul methods</b>	<p>Overhaul methods are to include:</p> <ul style="list-style-type: none"> <li>measurements, fault finding with aural, visual and functional assessments (including damage, corrosion, wear, electrical leakage, short circuits and broken circuits), reading/interpreting manufacturer/component supplier information, dismantle, clean, inspect, test and reassemble, fit replacement parts and retest for service</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular</li> </ul>

<b>RANGE STATEMENT</b>	
	movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling, testing equipment, including diode testers, multimeters, growlers and insulation testers, soldering equipment, power tooling, test benches, measuring equipment, including micrometers and callipers</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts, solder, flux and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the overhaul of charging system alternators</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR3018 Overhaul starting motors

### Modification History

Release	Comment
Release 1	Replaces AURE319245A Overhaul starting motors Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to overhaul automotive starting motor systems and direct current motors fitted to vehicles, plant and equipment, motorcycles and marine equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing of starting motors and identification of faults, causes, disassembly, overhaul, reassembly and retesting of starting motors and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method, processes and equipment 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal safety needs, are observed throughout the work 1.4. Equipment and tooling are identified and checked for safe and effective operation 1.5. Procedures are determined to minimise task time
2. Dismantle starting motors and clean individual components/ parts	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Starting motors are dismantled according to component/vehicle manufacturer/component supplier procedures 2.3. Starting motors are dismantled without causing damage to components 2.4. Component parts are cleaned according to unit/vehicle manufacturer/component supplier recommended solvents and procedures 2.5. All work is completed according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies
3. Inspect and test starting motor components/parts	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Starting motors are inspected and tested according to component/vehicle manufacturer/component supplier specifications 3.3. Starting motor component parts are inspected and tested without causing damage to component or system 3.4. Worn, damaged, deteriorated or faulty components/parts are identified 3.5. Part requirements are documented and reported according to enterprise procedures 3.6. Inspection and testing is according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies
4. Overhaul and reassemble starting motors and fit replacement components/parts	4.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 4.2. Parts are repaired to manufacturer/component supplier specifications 4.3. Starting motor replacement parts are selected and fitted to

ELEMENT	PERFORMANCE CRITERIA
	<p>meet customer requirements</p> <p>4.4.Starting motors are assembled according to unit/vehicle manufacturer/component supplier specifications</p> <p>4.5.Starting motors are assembled without causing damage to components/parts</p> <p>4.6.Starting motors are assembled according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies</p> <p>4.7.Assembled motors are tested according to component/vehicle manufacturer/component supplier specifications</p> <p>4.8.Workplace and equipment documents are completed in accordance with site requirements</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored</p> <p>5.2.Waste and scrap is removed following workplace procedure</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</p> <p>5.6.Tooling and equipment is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for the overhaul of automotive starting motors
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information of starting motor overhaul procedures
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete tests and measurements to determine the serviceability of starting motor component parts
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform starting motor overhaul and component testing and repair/replacement procedures
- problem-solving skills for a range of procedural issues
- use workplace technology related to the overhaul of starting motor systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirement, equipment, material and personal safety requirements
- alternator operating principles
- construction and operation of starting system motors and components relevant to application
- types and layout of service/repair manuals (hard copy and electronic)
- component cleaning, inspection and testing procedures
- dismantling and assembling/overhaul procedures
- unit assembly test procedures
- work organisation and planning processes

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- cleaning, testing, inspecting and evaluating components of units
- overhauling units, including dismantling and reassembling units to manufacturer/component supplier requirements
- repairing/replacing component parts to manufacturer/component supplier requirements
- testing final product for return to service
- completing workplace and equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the overhaul of starting system motors
- equipment, hand and power tooling appropriate to the overhaul of starting system motors
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry RS&R Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

	<p>knowledge</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electrical starting motor and components</b>	Electrical starting motor and components may be heavy or light, low voltage/direct current motors and fitted to vehicles, plant and equipment, motorcycles and marine equipment
<b>Faults</b>	Faults may include: <ul style="list-style-type: none"> <li>starting motor not operating, noisy operation, poling, open circuits, short circuits, earthing</li> </ul>
<b>Overhaul methods</b>	Overhaul methods are to include: <ul style="list-style-type: none"> <li>measurements, fault finding with aural, visual and functional assessments (including damage, corrosion, wear, electrical leakage, short circuits and broken circuits), reading/interpreting manufacturer/component supplier information, dismantle, clean, inspect, test and reassemble, fit replacement parts and retest for service</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing</li> </ul>

<b>RANGE STATEMENT</b>	
	fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>hand tooling, testing equipment, including diode testers, multimeters, growlers, insulation testers, soldering equipment, power tooling, test benches, measuring equipment, including micrometers and callipers</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>spare parts, solder flux and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>safe work procedures related to the overhaul of starting system motors</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> <li>instructions issued by authorised enterprise or external persons</li> <li>Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR3019 Inspect, service and repair AC electric motor drive systems

### Modification History

Release	Comment
Release 1	Replaces AURE319271A Inspect, service and repair AC electric motor drive systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence required to carry out the inspection, service and repair of AC electric motor drive systems. Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	The unit includes identification and confirmation of work requirement, preparation for work, inspection and testing, analysis of results and the service and repair of AC electric motor drive systems and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect AC electric motor drive system	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and calibration requirements for inspection and testing are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with AC electric motors are observed
2. Conduct AC motor drive system tests and analyse results	2.1. Methods for AC electric motor drive system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is forwarded to persons for action in accordance with workplace procedures
3. Prepare to service and repair AC electric motor drive systems	3.1. WHS requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information are identified and sourced 3.3. Technical and tool requirements for service and repair of AC electric motor drive systems are identified and support equipment is identified and prepared
4. Carry out service and repair	4.1. Methods for service and repair of AC electric motor drive systems are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 4.2. Adjustments made during the service and repair are in accordance with manufacturer/component supplier specifications
5. Prepare drive system/ vehicle for delivery to	5.1. Service/repairs schedule documentation is completed 5.2. Final inspection is made to ensure protective guards, safety

ELEMENT	PERFORMANCE CRITERIA
customer and storage	<p>features and cowlings are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations</p> <p>5.4.AC electric motor drive system/vehicle is cleaned for delivery to customer or stored to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection, service and repair of ac electric motor drive systems, including the use of electronics, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with AC electric motor drive systems
- operating principles of AC electric motor drive systems and their relationship to other components
- types and layout of service/repair manuals (hard copy and electronic)
- inspection/test procedures
- service and repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection, service and repair of motor drive systems in accordance with manufacturer/ component supplier and workplace requirements
- interpreting inspection/test results
- completing service and repair of AC electric motors and associated components within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection, service and repair of AC electric motor drive systems
- equipment, hand and power tooling appropriate to the inspection, service and repair of AC electric motor drive systems
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines

**EVIDENCE GUIDE**

	<p>of the Automotive Industry RS&amp;R Training Package</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include:

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• hand tooling, meters, gauges and load testing devices</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• spare parts, lubricants and fluids and cleaning materials</li></ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"><li>• verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li></ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the inspection, service and repair of ac electric motor drive systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR3020 Repair electronic systems

### Modification History

Release	Comment
Release 1	Replaces AURE321066A Repair electronic systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to carry out repairs to electronically controlled systems, including aftermarket accessories, wipers, windows, lighting, turning indicators, hazard lights, door locks and fan blowers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing of systems and identification of faults/causes, repair and retesting of electronic systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>For minor electrical repairs see AURETR2012 Test and repair basic electrical circuits.</p> <p>For general electrical repairs see AURETR3032 Repair electrical systems.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method, process and equipment 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal safety needs, are observed throughout the work 1.4. Equipment and tooling are identified and checked for safe and effective operation 1.5. Procedures are determined to minimise task time
2. Test systems/ components and identify faults	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specification 2.2. Tests are carried out to determine faults using tooling and techniques 2.3. Systems/components are tested without causing damage to component or system 2.4. Faults are identified and preferred repair action determined 2.5. Tests are carried out according to industry regulations/ guidelines, WHS, legislation and enterprise procedures/policies
3. Repair electronic systems	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Repairs, component replacement and adjustments are carried out using tooling, techniques and materials 3.3. Repairs to electronic systems are completed without causing damage to component or system 3.4. Electronic systems are tested and results are documented in accordance with workplace policies and procedures 3.5. Repairs and tests are carried out according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies 3.6. Workplace and equipment documents are completed in accordance with site requirements
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored 4.2. Waste and scrap is removed following workplace procedure 4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures 4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements 4.5. Operator maintenance is completed in accordance with

ELEMENT	PERFORMANCE CRITERIA
	<p>manufacturer/component supplier specifications and site procedures</p> <p>4.6.Tooling and equipment is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for circuit and component testing, and major repairs/component replacement
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information of electronic circuit/component testing, servicing and replacement procedures
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete tests and measurements to determine electronic circuit/component major repair/replacement requirements
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform electronic testing, and repair/replacement procedures
- problem-solving skills for a range of procedural issues
- use workplace technology related to the repair of electronic systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operation of electronic control systems/components
- operation of solid state devices
- types and layout of service/repair manuals (hard copy and electronic)
- procedures for the repair/replacement of electronic systems/components
- testing and diagnosis procedures for electronic system/component faults
- input/output measurement techniques
- work organisation and planning processes

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing and identifying faults in electronic systems
- testing inputs and outputs to electronic systems
- repairing/replacing electronic systems/components to site and manufacturer/component supplier requirements
- completing workplace and equipment documents.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant repairing electronic systems
- equipment, hand and power tooling appropriate to the repair of electronic systems
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry RS&R Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electronically controlled systems</b>	Electronically controlled systems may include: <ul style="list-style-type: none"> <li>accessories, wipers, windows, lighting, turning indicators, hazard lights, door locks, fan blowers and cruise control</li> </ul>
<b>Fittings</b>	Electronically controlled systems may be fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles
<b>Faults</b>	Faults may include: <ul style="list-style-type: none"> <li>electrical/electronic unit faults, wire repair/replacement, open circuits, short circuits and earthing</li> </ul>
<b>Fault finding methods</b>	Fault finding methods are to include: <ul style="list-style-type: none"> <li>electrical measurements, fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects, reading/interpreting wiring diagrams, diagnosing and determining faults, soldering, crimping, repairing components and wiring and remove/replace components</li> </ul>
<b>Critical precautions</b>	Critical precautions, including manufacturer/component supplier procedures, must be applied as poor working practices are likely to damage electronic system ECUs and/or other components
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances,</li> </ul>

<b>RANGE STATEMENT</b>	
	electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering the acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling, testing equipment, including multimeters, power tooling, air tooling, specialist tooling for removal/adjustment, manufacturer/component supplier diagnostic tooling, oscilloscopes and scan tooling</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts, lubricants and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of electronic systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection for Diesel Vehicle Guidelines</li> <li>• engineer's design specifications and instructions</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR3021 Inspect, service and repair electronic management, monitoring and tracking systems

### Modification History

Release	Comment
Release 1	Replaces AURE321971A Inspect, service and repair electronic management, monitoring and tracking systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to carry out inspection, service and repair of electronic monitoring, management and tracking systems in rural and resources industry plant, machinery and equipment. Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	The unit includes identification and confirmation of work requirement, preparation for work, conduct of inspection and identification of servicing/repair requirements, completion of servicing and repair of systems and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake inspection	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for inspection are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with electronic systems are observed</p>
2. Conduct inspection and analyse results	<p>2.1.Methods for the conduct of inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Prepare to service/repair systems	<p>3.1.WHS requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for service are identified and support equipment is identified and prepared</p>
4. Carry out service and repairs to systems	<p>4.1.Methods for the conduct of service and repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.All adjustments made during the service and repair are in accordance with manufacturer/component supplier specifications</p>
5. Prepare equipment for delivery to customer and/or storage	<p>5.1.Service/repairs schedule documentation is completed</p> <p>5.2.Final inspection is made to ensure protective features are in place and work is to workplace expectations</p> <p>5.3.Equipment is cleaned and/or stored to workplaces</p>

ELEMENT	PERFORMANCE CRITERIA
	expectations 5.4.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- analytical skills for identification and analysis of technical information
- plain English literacy and communication skills in relation to dealing with customers and team members
- questioning and active listening skills for example when obtaining information from customers
- oral communication skills sufficient to convey information and concepts to customers
- plan and organise activities as applied to work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- work with others and in a team by interacting effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and service/repair of electronic tracking systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- types, characteristics, applications and limitations of electronic management, monitoring and tracking systems
- operating principles of systems and their relationship to each other
- inspection procedures
- service and/or repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting inspection results
- conducting the inspection, service and repair of a range of electronic management systems in accordance with workplace and manufacturer/component supplier requirements
- conducting the inspection, service and repair of at least one electronic monitoring and/or tracking system in accordance with workplace and manufacturer/ component supplier requirements
- completing service and repair of systems within workplace timeframes
- presenting equipment to customer in compliance with workplace requirements.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and service/repair of electronic management, monitoring and tracking systems
- equipment, hand and power tooling appropriate to the inspection and service/repair of electronic management, monitoring and tracking systems

## EVIDENCE GUIDE

	<ul style="list-style-type: none"> <li>activities covering mandatory task requirements</li> <li>specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry RS&amp;R Training Package</li> <li>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</li> <li>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li> <li>Assessment may be applied under project related conditions and require evidence of process</li> <li>Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li> <li>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electronic management, monitoring and tracking systems</b>	Electronic management, monitoring and tracking systems refer to: <ul style="list-style-type: none"> <li>systems which control integration and operation of sub-systems which make up rural and resources industry plant, machinery and equipment</li> </ul>
<b>Rural and resources industries</b>	Rural and resources industries refer to: <ul style="list-style-type: none"> <li>specialist agricultural, mining and civil engineering sectors</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian Standards, internal company</li> </ul>

<b>RANGE STATEMENT</b>	
	quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>internal and external computerised diagnostic systems and tooling, hand tooling, meters, gauges and load testing, pulling and pushing devices</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>repair parts, adhesives and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>safe work procedures related to the inspection and service/repair of electronic management, monitoring and tracking systems</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> <li>instructions issued by authorised enterprise or external persons</li> <li>Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Electrical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Electrical and Electronic
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## AURETR3022 Diagnose and repair vehicle dynamic control systems

### Modification History

Release	Comment
Release 1	<p>Replaces:</p> <ul style="list-style-type: none"><li>• AURE321671A Service and repair electronically operated stability control systems</li><li>• AURE321571A Service and repair electronically operated traction control systems</li><li>• AURE321471A Service and repair electronically controlled anti-lock braking systems</li></ul> <p>Performance Criteria and Range Statement updated to reflect technologies</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair vehicle dynamic control systems in light and heavy vehicles. It involves diagnosing deviations from correct operation, repairing dynamic control system components and associated systems, and undertaking post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	Work applies to vehicle dynamic control systems fitted to light and heavy vehicles.  Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose vehicle dynamic control systems	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>1.5. <b>Tools and equipment</b> are identified for effective repair methods</p>
2. Diagnose vehicle dynamic control systems	<p>2.1. <b>Vehicle dynamic control systems</b> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair vehicle dynamic control systems	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Prepare vehicle for delivery to customer	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and finalise work processes	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and work area are cleaned and inspected</p>

	<p>according to workplace procedures</p> <p>5.4.Tools and equipment are maintained according to workplace procedures</p> <p>5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures</p>
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when diagnosing and repairing various vehicle dynamic control systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - determine the underlying causes of faults
  - refer problems outside area of responsibility to appropriate person and suggest possible causes or solutions
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technical skills to use hand, power and specialised tools relating to the repair of vehicle dynamic control systems
- technology skills to:
  - operate diagnostic and automotive test equipment
  - use technology to collect, analyse and provide information

#### Required knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - individual state and territory legislation
  - codes of practice
  - personal protection needs when working on vehicles in an automotive workshop
- application, purpose and operation of vehicle dynamic control systems
- principal types of vehicle dynamic control systems, including:
  - electronic braking control module (EBCM):
    - active roll-over protection
    - anti-lock braking
    - brake assist
    - descent control
    - electronic brake force distribution
    - electronic park brake
    - hill start assist
    - stability control
    - traction control
- techniques for reading and interpreting automotive technical information, graphic symbols and wiring diagrams
- diagnostic and testing procedures, including:
  - diagnostic procedures for vehicle dynamic control systems, including accessing and interpreting:
    - diagnostic trouble codes
    - diagnostic flow charts
  - analysis of system operation using electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- select methods and techniques appropriate to the fault being diagnosed
- complete preparatory activity in a systematic manner
- diagnose and repair at least three different faults within vehicle dynamic control systems
- conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with various vehicle dynamic control system faults
- equipment appropriate for the testing of vehicle dynamic control systems
- specifications and workplace instructions

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- tools appropriate for repairing, replacing and adjusting vehicle dynamic control systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace first aid equipment</li> <li>• workplace safety policies and procedures</li> <li>• safe work procedures relating to the repair of vehicle under-body systems</li> <li>• safe handling of material</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• personal protective clothing and equipment</li> <li>• use of fire-fighting equipment</li> <li>• safe use of tools and equipment.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to the repair and replacement of instrument and warning systems</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• obtaining vehicle service history</li> <li>• isolating faults</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>inspecting and evaluating components.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>hand tools</li> <li>vehicle lifting devices</li> <li>power tools</li> <li>specialist tools for removing vehicle trim and assemblies</li> <li>dynamometer</li> <li>electronic testing equipment, including:               <ul style="list-style-type: none"> <li>multimeter</li> <li>oscilloscope</li> <li>scan tools.</li> </ul> </li> </ul>
<b><i>Vehicle dynamic control systems</i></b> may include:	<ul style="list-style-type: none"> <li>anti-lock braking system (ABS) control</li> <li>traction control</li> <li>steering control</li> <li>stability control</li> <li>powertrain management control.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes:               <ul style="list-style-type: none"> <li>back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>probing terminal and connectors with inappropriate test probes</li> <li>pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>component malfunction, including:               <ul style="list-style-type: none"> <li>sensor malfunction</li> <li>yaw rate</li> <li>lateral rate</li> <li>steering angle</li> <li>electronic control module (ECM) or unit (ECU)</li> <li>electronic brake control module (EBCM)</li> </ul> </li> <li>CAN-bus network operational faults</li> <li>system and component adjustment</li> <li>open or short circuits to power, ground and reference circuits</li> <li>high circuit resistance</li> <li>diagnosis trouble codes (DTC) being set.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• procedures for removing, replacing and adjusting</li> <li>• procedures for dismantling, repairing, re-assembling and adjusting</li> <li>• fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical short and open circuits</li> <li>• electrical measurements</li> <li>• diagnosing and determining repair requirements, electronic systems data, including fault codes, sensor, actuator measurement, and control unit input and output signals</li> <li>• reading and interpreting wiring diagrams.</li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• validating the effectiveness of the repair action</li> <li>• confirming that reported fault has been rectified</li> <li>• confirming that no other faults are present as a result of the repair action.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR3023 Diagnose and repair electronic spark ignition engine management systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURE321171A Service and repair electronic spark ignition engine management systems</p> <p>Performance Criteria and Range Statement updated to reflect technologies</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair electronic spark ignition engine management systems.</p> <p>The unit involves diagnosing deviations from correct operation, repairing electronic spark ignition engine management system components and associated systems, and undertaking post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work applies to light and heavy petrol fuelled vehicles; LPG, CNG and LNG fuelled vehicles; motorcycles; outdoor power equipment; and marine environments.</p> <p>Engine management systems are systems where the electronic control unit (ECU) incorporates control over fuel injection and ignition timing control and all other systems relating to engine performance and emissions.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair electronic spark ignition engine management systems	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>1.5. <b>Tools and equipment</b> are identified for effective repair methods</p>
2. Diagnose electronic spark ignition engine management systems	<p>2.1. <b>Electronic spark ignition engine management systems</b> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair electronic spark ignition engine management systems	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Prepare vehicle and equipment for delivery to customer after repair is completed	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and finalise work processes	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and work area are cleaned and inspected</p>

	<p>according to workplace procedures</p> <p>5.4. Tools and equipment are maintained according to workplace procedures</p> <p>5.5. Faulty equipment is identified, tagged and isolated according to workplace procedures</p>
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when diagnosing and repairing various electronic spark ignition engine management systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - determine the underlying causes of faults
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use hand, power, measuring and specialised tools relating to the repair of electronic spark ignition engine management systems

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements relating to diagnosing and repairing electronic spark ignition engine management systems, including:
  - individual state and territory legislation
  - codes of practice
  - personal protection needs
- principal types of vehicle electronic spark ignition engine management systems, including:
  - electronic ignition systems: distributor and distributor-less systems
  - coil on plug ignition systems: two and three wire
  - fuel injection, return and non-return systems
  - turbo and supercharger control
  - variable intake
  - variable valve timing
  - drive-by-wire systems
- application, purpose and operation of electronic spark ignition engine management systems, including:
  - misfire detection
  - ignition timing and spark advance
  - electronic control of spark advance
  - dwell period
  - camshaft and crankshaft sensors
  - knock sensors
  - spark plugs
- technical information, graphic symbols and diagrams relating to electronic spark ignition engine management systems
- diagnostic and testing procedures, including:
  - diagnostic procedures for electronic spark ignition engine management systems, including:
    - accessing and interpreting diagnostic trouble codes (DTC)
    - diagnostic flow charts
  - analysis of system operation using electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- component corrosion
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of electronic spark ignition engine management systems
- conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements
- present vehicle and equipment in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with electronic spark ignition engine management faults relevant to the qualification being sought
- equipment appropriate for the testing of vehicle electronic spark ignition engine management systems

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- specifications and workplace instructions
- tools appropriate for repairing, replacing and adjusting vehicle electronic spark ignition engine management systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with: <ul style="list-style-type: none"> <li>• high voltage ignition systems</li> <li>• LPG, CNG and LNG fuels</li> <li>• high pressure fuel rail systems and components</li> </ul> </li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to repairing and replacing electronic spark ignition engine management systems</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• component inspection and evaluation.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters, ohmmeters, voltmeters and tachometers</li> <li>• fuel pressure and flow meter</li> <li>• insulation testers</li> <li>• power tools and air tools</li> <li>• tune scopes</li> <li>• engine analysers</li> <li>• dynamometers</li> <li>• oscilloscope</li> <li>• diagnostic scan tools.</li> </ul>
<b><i>Electronic spark ignition engine management systems</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic ignition systems</li> <li>• direct fire ignition (DFI) systems</li> <li>• coil-on-plug ignition systems</li> <li>• turbo chargers and intercoolers</li> <li>• air intake</li> <li>• exhaust emission control</li> <li>• throttle control.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• engine difficult to start or will not start</li> <li>• engine misfiring</li> <li>• poor engine performance</li> <li>• engine knock</li> <li>• overheating</li> <li>• DTC being set.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• pre- and post-repair testing</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>identifying and testing components</li> <li>diagnosing and determining faults</li> <li>component repair procedures, including: <ul style="list-style-type: none"> <li>removal, replacement and adjustment procedures</li> <li>dismantle, repair, re-assembly and adjustment procedures</li> </ul> </li> <li>electrical measurements</li> <li>peak voltage testing</li> <li>visual and functional assessments, including for damage and wear.</li> </ul>
<i>Post-repair testing</i> may include:	<ul style="list-style-type: none"> <li>validating effectiveness of the repair action</li> <li>confirming that reported fault has been rectified</li> <li>confirming that no other faults are present as a result of the repair action.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR3024 Diagnose and repair electronic compression ignition engine management systems

### Modification History

Release	Comment
Release 1	Replaces AURE321771A Service and repair electronic compression ignition engine management systems  Performance Criteria and Range Statement updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair electronic compression ignition engine management systems.</p> <p>The unit involves diagnosing deviations from correct operation, repairing electronic compression ignition engine management system components and associated systems, and undertaking post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, testing systems, identifying faults and potential causes, repairing and retesting electronic compression ignition engine management systems, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work applies to diesel fuelled vehicles and equipment in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Engine management systems are systems where the electronic control unit (ECU) incorporates control over fuel injection, ignition timing control and all other systems relating to engine performance and emissions.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair electronic compression ignition engine management systems	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>1.5. <b>Tools and equipment</b> are identified for effective repair methods</p>
2. Diagnose electronic compression ignition engine management systems	<p>2.1. <b>Electronic compression ignition engine management systems</b> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <i>inappropriate testing procedures</i></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair electronic compression ignition engine management systems	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Prepare vehicle and equipment for delivery to customer after repair is completed	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and finalise work processes	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and work area are cleaned and inspected</p>

	<p>according to workplace procedures</p> <p>5.4.Tools and equipment are maintained according to workplace procedures</p> <p>5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures</p>
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when diagnosing and repairing various electronic compression ignition engine management systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - determine the underlying causes of faults
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use hand, power, measuring and specialised tools relating to the repair of electronic compression ignition engine management systems

## REQUIRED SKILLS AND KNOWLEDGE

- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements relating to diagnosing and repairing electronic compression ignition engine management systems, including:
  - individual state and territory legislation
  - codes of practice
  - personal protection needs
- dangers of working with high-pressure diesel fuel systems
- principal types of vehicle electronic compression ignition engine management systems, including:
  - direct injection, including:
    - electronic unit injectors (EUI)
    - hydraulic electronic unit injectors (HEUI)
  - indirect injection
  - common rail systems, including:
    - common rail solenoid
    - piezo design
    - amplified systems
- application, purpose and operation of electronic compression ignition engine management systems, including:
  - common rail fuel control system
  - fuel injectors, types and designs
  - glow plugs
  - exhaust gas recirculation (EGR) and positive crankcase ventilation (PCV) system
  - diesel particulate diffuser (DPD) exhaust after-treatment system
  - turbo and super charger and intercooler systems
  - fuel filter, coolers and water trap
- techniques for reading and interpreting technical information, graphic symbols and diagrams
- diagnostic and testing procedures, including:
  - diagnostic procedures for electronic compression ignition engine management systems, including:
    - accessing and interpreting diagnostic trouble codes
    - diagnostic flow charts
  - analysis of system operation using electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment

REQUIRED SKILLS AND KNOWLEDGE
<ul style="list-style-type: none"><li>• visual, aural and functional assessments, including:<ul style="list-style-type: none"><li>• component damage and wear</li><li>• component corrosion</li></ul></li><li>• repair procedures, including:<ul style="list-style-type: none"><li>• component removal and replacement procedures</li><li>• component and associated system adjustment and recalibration procedures</li></ul></li></ul>

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• demonstrate safe work procedures relating to working with high fuel pressure and high injector voltages on diesel engines</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• diagnose and repair a range of electronic compression ignition engine management systems</li> <li>• conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements</li> <li>• present vehicle and equipment in a condition that complies with workplace requirements.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles with electronic compression ignition engine management faults relevant to the qualification being sought</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- equipment appropriate for the testing of vehicle electronic compression ignition engine management systems
- specifications and workplace instructions
- tools appropriate for repairing, replacing and adjusting vehicle electronic compression ignition engine management systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high pressure fuel systems</li> <li>• hazards associated with high injector voltage circuits</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to the repair and replacement of electronic compression ignition engine management systems</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• component inspection and evaluation.</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters, ohmmeters, voltmeters and tachometers</li> <li>• insulation testers</li> <li>• power tools and air tools</li> <li>• fuel pressure and fuel flow gauges</li> <li>• engine analysers</li> <li>• dynamometers</li> <li>• oscilloscopes</li> <li>• diagnostic scan tools.</li> </ul>
<b><i>Electronic compression ignition engine management systems</i></b> may include:	<ul style="list-style-type: none"> <li>• direct injection: <ul style="list-style-type: none"> <li>• electronic unit injectors</li> <li>• hydraulic electronic unit injectors</li> </ul> </li> <li>• indirect injection</li> <li>• common rail systems, including: <ul style="list-style-type: none"> <li>• solenoid</li> <li>• piezo electric</li> <li>• amplified systems.</li> </ul> </li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• engine difficult to start or will not start</li> <li>• engine misfiring</li> <li>• poor engine performance</li> <li>• engine knock</li> <li>• overheating</li> <li>• black or white smoke from exhaust</li> <li>• PCV defective</li> <li>• diesel fuel contamination</li> <li>• blocked or restricted fuel injectors</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• DPD exhaust after treatment system defective or not serviced</li> <li>• diagnosis trouble codes (DTC) being set.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• pre- and post-repair testing</li> <li>• identifying and testing components</li> <li>• diagnosing and determining faults</li> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures</li> </ul> </li> <li>• electrical measurements</li> <li>• fuel pressure testing involving visual and functional assessments, including for damage and wear.</li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• validating effectiveness of the repair action</li> <li>• confirming that reported fault has been rectified</li> <li>• confirming that no other faults are present as a result of the repair action.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR3025 Test, charge and replace batteries

### Modification History

Release	Comment
Release 1	Replaces AURE218676A Test, service and charge batteries (Heavy Vehicle)  Performance Criteria and Range Statement updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to test, charge, jump-start, and remove and replace automotive batteries.</p> <p>The unit involves identifying and confirming work requirements; preparing for work; servicing, testing and charging batteries; and completing work finalisation processes, including clean-up and documentation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to light vehicles, heavy vehicles, motorcycles, mining plant and equipment, outdoor power equipment, and marine craft.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to test and inspect battery	<p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b>, including individual state and territory regulatory requirements and <b>personal protective equipment (PPE)</b> needs, are observed throughout the work</p> <p>1.3. <b>Safe operating procedures</b> and information such as site procedures and specifications are sourced</p> <p>1.4. <b>Technical information</b> is accessed from manufacturer and component supplier specifications and interpreted</p> <p>1.5. <b>Tools, equipment</b> and <b>materials</b> are identified and prepared</p> <p>1.6. Warnings in relation to working with batteries are observed</p>
2. Test and service battery	<p>2.1. <b>Service and maintenance methods</b> are carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>2.2. Electrolyte levels are checked and topped up where appropriate according to service and maintenance methods</p> <p>2.3. Batteries and terminals are cleaned according to site procedures</p> <p>2.4. Battery voltage and load checks are conducted to confirm service repair action</p> <p>2.5. Battery is charged, jump-started or replaced</p>
3. Charge battery	<p>3.1. Technical information for charging is accessed from manufacturer and component supplier specifications and is correctly interpreted</p> <p>3.2. Components, tools and equipment to complete work are identified, selected and prepared according to site procedures</p> <p>3.3. Electrolyte levels are checked and topped up according to site procedures</p> <p>3.4. Batteries are charged according to site procedures and component manufacturer and supplier recommendations</p>
4. Carry out jump-start procedures to vehicle	<p>4.1. Technical information is accessed from manufacturer and component supplier specifications and is correctly interpreted</p> <p>4.2. Battery voltage is identified and vehicle and equipment are confirmed as being appropriate to jump-start procedures</p> <p>4.3. Leads are connected and disconnected in correct sequence and polarity</p> <p>4.4. Work is carried out without causing damage to the vehicles</p>

ELEMENT	PERFORMANCE CRITERIA
	involved and equipment being used
5. Remove and replace battery	5.1.Battery is removed from vehicle according to site procedures, and component manufacturer and supplier recommendations 5.2.Battery is replaced in line with vehicle electrical and physical specifications and measurements 5.3.Correct secure battery fitment is confirmed 5.4.Battery terminals are reconnected and tightened
6. Retest battery	6.1.Test methods are implemented according to workplace procedures and manufacturer and component supplier specifications 6.2.Test results are compared with manufacturer and component supplier specifications 6.3.Results are documented with evidence, and supporting information is recorded
7. Prepare vehicle and equipment for delivery to customer after battery is replaced	7.1.Final inspection is made to ensure work is to workplace expectations 7.2.Vehicle is cleaned to workplace expectations and presented ready for use 7.3.Workplace documentation is processed according to workplace procedures
8. Clean up work area and maintain equipment	8.1.Material that can be reused or recycled is collected and stored according to workplace sustainability practices 8.2.Waste and scrap are removed according to workplace practices 8.3.Tools, equipment and work area are cleaned and inspected according to workplace procedures 8.4.Tools and equipment are maintained according to workplace procedures 8.5.Faulty equipment is identified, tagged and isolated according to workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - communicate basic information relating to battery safety
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - participate in self-improvement activities
  - recognise a workplace problem or potential problem
- literacy skills to:
  - read and follow battery inspection and maintenance information
  - read and follow information on standard operating procedures and repair guidelines
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities that implement and follow standard workplace procedures
- problem-solving skills to refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - locate and identify appropriate tools and equipment
  - locate technical information
  - recognise limitations and seek timely advice
  - follow basic workplace documentation, such as operating procedures
- teamwork skills to:
  - work with others and in a team by cooperating with team members
  - work with diverse individuals and groups
- technical skills to:
  - understand technical information relating to recognising and reporting unsafe situations
  - select tools and equipment appropriate to inspecting, servicing and maintaining light and heavy vehicle batteries
  - use battery servicing and testing tools and equipment safely
  - maintain tools and equipment using appropriate techniques and standard operating procedures
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

- use workplace technology relating to inspecting, servicing and maintaining battery storage systems, including use of specialist tools, measuring equipment and communication devices
- report and document results

**Required knowledge**

- WHS and environmental regulations, requirements, equipment and material, including personal safety requirements
- battery testing methods
- dangers of working with battery testing equipment
- dangers associated with overcharging batteries
- operating principles and layout of vehicle battery storage systems
- battery inspection procedures
- battery service and maintenance procedures
- workplace quality procedures
- work organisation and planning processes relating to testing, charging and replacing batteries

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service and charge batteries
- test batteries and battery connections
- jump-start vehicles
- remove and replace vehicle batteries correctly
- accurately interpret inspection and test results
- conduct servicing, removal and replacement according to workplace, manufacturer and component supplier requirements
- present vehicle and equipment in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- material relevant to servicing, maintaining and replacing batteries, including a range of various battery types
- equipment, and hand and power tools appropriate to servicing, maintaining and replacing batteries
- specifications and work instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>personal protective clothing and equipment</li> <li>safe use of tools and equipment</li> <li>handling of potentially hazardous material and substances</li> <li>use of fire-fighting equipment</li> <li>first aid training and response</li> <li>control of hazards and hazardous materials.</li> </ul>
<b><i>Personal protective equipment</i></b> may include:	<ul style="list-style-type: none"> <li>safety glasses</li> <li>protective clothing</li> <li>gloves.</li> </ul>
<b><i>Safe operating procedures</i></b> may include:	<ul style="list-style-type: none"> <li>conducting operational risk assessments</li> <li>treatments associated with vehicle movement</li> <li>toxic substances</li> <li>electrical safety</li> <li>machinery movement and operation</li> <li>manual and mechanical lifting and shifting</li> <li>procedures for working in proximity to others and site visitors.</li> </ul>
<b><i>Technical information</i></b> may include:	<ul style="list-style-type: none"> <li>battery manufacturer and component supplier recommendations.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>hand tools</li> <li>load testing devices</li> <li>hydrometer</li> <li>multimeter</li> <li>jumper leads</li> <li>booster charger.</li> </ul>
<b><i>Materials</i></b> may include:	<ul style="list-style-type: none"> <li>battery consumables</li> <li>cleaning materials.</li> </ul>
<b><i>Service and maintenance methods</i></b> may include:	<ul style="list-style-type: none"> <li>inspecting battery, terminals and leads</li> <li>inspecting battery securing system</li> <li>cleaning battery and battery compartment or storage area</li> <li>topping up battery fluid</li> <li>testing battery with a hydrometer.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR3026 Remove, replace and program electrical and electronic units and assemblies

### Modification History

Release	Comment
Release 1	<p>Replaces AURE218664A Remove and replace electrical/electronic units/assemblies</p> <p>Performance Criteria and Range Statement updated to reflect technologies</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to remove and replace electrical units and assemblies, such as powertrain control modules (PCM), engine and body control modules, as well as other electronic control units that are an integral part of the vehicle's computer area network databus (CAN-bus) network, to facilitate body repair activities or similar.</p> <p>The unit involves identifying and confirming work requirements; preparing for work; and completing work finalisation processes, including clean-up and documentation.</p> <p>Assistance from a licensed person must be sought in relation to air conditioning and LPG/CNG/LNG systems and components, and in recommissioning systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	Work applies to electrical units and assemblies that are fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.  Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Tools and equipment</b> are identified for effective removal, replacement and testing procedures</p>
2. Remove electrical and electronic units and assemblies	<p>2.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>2.2. <b>Electrical and electronic units and assemblies</b> are removed using approved methods, tools and equipment</p> <p>2.3. Assistance from a licensed person is sought in relation to air conditioning and LPG/CNG/LNG systems and component removal</p> <p>2.4. Removal activities are carried out according to industry regulations and guidelines, workplace health and safety (WHS) legislation, and workplace policies and procedures</p> <p>2.5. Units and assemblies are handled and stored according to manufacturer and component supplier requirements</p>
3. Replace electrical and electronic units and assemblies	<p>3.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>3.2. Electrical and electronic control units and assemblies are replaced using approved methods, tools and equipment</p> <p>3.3. Assistance from a licensed person is sought in relation to air conditioning and LPG/CNG/LNG systems and component replacement</p> <p>3.4. Replacement activities are carried out according to industry regulations and guidelines, WHS legislation and workplace policies and procedures</p>
4. Test and reprogram electrical and electronic units and assemblies	<p>4.1. Testing procedures on replaced electrical and electronic control unit and assemblies are carried out</p> <p>4.2. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>4.3. Checking and testing are achieved without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>4.4. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>4.5. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>repairs or adjustments</p> <p>4.6. <b>Reprogramming options</b> are analysed and those most appropriate are selected</p> <p>4.7. Component replacement and programming procedures are carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>4.8. <b>Post-repair testing</b> is conducted and results are documented according to workplace procedures and relevant legislation</p>
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored</p> <p>5.2. Waste and scrap are removed following workplace procedures</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>5.4. Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>5.5. Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures</p> <p>5.6. Tools and equipment are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when replacing electronic units and assemblies in complex automotive electrical systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to removing and replacing vehicle electrical and electronic units and assemblies, including:
  - specialist tools and equipment

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- electrical measuring equipment
- technology skills to:
  - operate a range of electrical and electronic diagnostic test equipment
  - use technology to collect, analyse and provide information

### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - individual state and territory legislation
  - codes of practice
  - personal protection needs
- procedures for removing, replacing, testing and reprogramming electrical and electronic units and assemblies and post-repair testing
- wiring harness and loom fabrication techniques
- procedures for removing and replacing wiring harnesses and looms
- soldering procedures and techniques
- terminal crimping and connector repair techniques
- cable types and sizes and current carrying capacity
- various types of wiring systems found in vehicles, including:
  - basic wiring
  - twisted pair
  - shielded wiring
  - CAN-bus and databus networks
- techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
- diagnostic and testing procedures, including:
  - analysis of system operation using electrical test equipment and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
    - water and moisture ingress
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• remove and replace a minimum of four units and assemblies to workplace, manufacturer and component supplier requirements, including: <ul style="list-style-type: none"> <li>• one supplementary restraint system module</li> <li>• one body control module</li> <li>• one engine or powertrain control module</li> </ul> </li> <li>• complete final functional test to specification</li> <li>• present vehicle and equipment in a condition that complies with workplace requirements.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

	<ul style="list-style-type: none"><li>• material relevant to removing and replacing electrical and electronic units and assemblies</li><li>• equipment, and hand and power tools appropriate to removing and replacing electrical and electronic units and assemblies</li><li>• specifications and work instructions.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• effective unit and assembly removal and replacement techniques</li> <li>• reprogramming procedures to enable replaced unit and assembly to communicate with vehicle CAN-bus systems</li> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high voltage ignition systems</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters and ohmmeters</li> <li>• heat-gun or blower</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• heat shrink sleeving and flexible conduit</li> <li>• terminals and connectors</li> <li>• electrical tape.</li> </ul>
<b><i>Electrical and electronic units and assemblies</i></b> may include:	<ul style="list-style-type: none"> <li>• electrical and electronic units and assemblies integral to the vehicle's CAN-bus network, including: <ul style="list-style-type: none"> <li>• engine control unit (ECU)</li> <li>• engine control module (ECM)</li> <li>• powertrain control module (PCM)</li> <li>• body control module (BCM)</li> <li>• supplementary restraint systems (SRS).</li> </ul> </li> </ul>
<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• continuity testing</li> <li>• insulation testing</li> <li>• isolation and repair to located faults</li> <li>• replacement of blown fuses or circuit breakers</li> <li>• replacement of damaged connectors or terminals</li> <li>• visual inspection and evaluation of components.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• open circuits</li> <li>• short circuits</li> <li>• high resistance circuits</li> <li>• damaged insulation</li> <li>• frayed wires</li> <li>• burnt wiring</li> <li>• water and moisture ingress</li> <li>• connector damage</li> <li>• terminal damage</li> <li>• diagnosis trouble codes (DTC) being set.</li> </ul>
<b><i>Reprogramming options</i></b>	<ul style="list-style-type: none"> <li>• service programming system (SPS)</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

may include:	<ul style="list-style-type: none"> <li>• manufacturer programming code and relearn procedures</li> <li>• original equipment manufacturer (OEM) specific programming code.</li> </ul>
<i>Post-repair testing</i> may include:	<ul style="list-style-type: none"> <li>• validating effectiveness of the replacement or repair action</li> <li>• confirming that reported fault has been rectified</li> <li>• confirming that no other faults are present as a result of the replacement and the reprogram or repair action.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR3027 Install ancillary electronic control unit systems and components

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to install ancillary electrical equipment systems and components in electronic control units (ECUs).</p> <p>The unit may require service programming code to connect and interface components to the vehicle computer area network databus (CAN-bus) network.</p> <p>The unit includes identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the installation and testing of ancillary electrical equipment systems and components in ECUs fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Installation options</b> are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5. <b>Tools and equipment</b> are identified for effective installation and testing procedures</p>
2. Install and program ancillary electronic components	<p>2.1. <b>Basic ancillary electrical equipment</b> is installed according to manufacturer and component supplier specifications</p> <p>2.2. <b>Programming code</b> is sought from original equipment manufacturer (OEM) to enable installed equipment to communicate with vehicle electrical system</p> <p>2.3. Testing is carried out using tools and diagnostic techniques without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.4. <b>Faults</b> are identified and preferred repair action is determined and carried out</p> <p>2.5. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
3. Prepare vehicle and equipment for delivery to customer	<p>3.1. Final inspection is made to ensure work is to workplace expectations</p> <p>3.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>3.3. Workplace documentation is processed according to workplace procedures</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored</p> <p>4.2. Waste and scrap are removed following workplace procedures</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>4.4. Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>4.5. Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures</p> <p>4.6. Tools and equipment are maintained according to workplace procedures</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when installing and programming various electronic ancillary systems and components
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to installing, testing and service programming ancillary electronic systems, including:
  - specialist tools and equipment

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- measuring equipment
- computerised technology
- technology skills to:
  - operate diagnostic and test equipment
  - operate service programming systems (SPS)
  - collect, analyse and provide information

### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - individual state and territory legislation
  - codes of practice
  - personal protection needs
- procedures to install, program and test electronic ancillary component and systems
- wiring harness and loom fabrication techniques
- procedures for removing and replacing wiring harnesses and looms
- various types of wiring systems found in vehicles, including:
  - basic wiring
  - twisted pair
  - shielded wiring
  - CAN-bus networks
  - various OEM databus network configurations
- techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
- diagnostic and testing procedures, including:
  - testing procedures for basic ancillary electrical installations, including:
    - following manufacturer and component suppliers' test procedures
    - following OEM service information
  - analysis of system operation using basic electrical test equipment and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
    - water and moisture ingress
- repair procedures, including:
  - component removal and replacement procedures
  - SPS procedures

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- procedures for adjusting components and associated system

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- read and interpret vehicle wiring diagrams
- install electronic ancillary electrical components to specification
- apply programming code processes to enable communication between ancillary component and vehicle system
- test electrical wiring harness and looms to locate possible faults
- conduct installation according to workplace, manufacturer and component supplier requirements
- accurately interpret test results
- present vehicle and equipment in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

of this unit:

- workplace location or simulated workplace
- materials relevant to the installation of electronic ancillary electrical components that could be fitted to a range of vehicles relevant to the qualification being sought
- equipment, and hand and power tools appropriate to installing basic ancillary electrical components
- specifications and work instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high voltage ignition systems</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Installation options</i></b> may include:	<ul style="list-style-type: none"> <li>• OEM and workplace instructions</li> <li>• equipment manufacturer and supplier instructions</li> <li>• aftermarket accessory instructions</li> <li>• SPS procedures and OEM intellectual property (IP) code</li> <li>• visual inspection and evaluation of components.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters and ohmmeters</li> <li>• insulation testers</li> <li>• crimping tools</li> <li>• soldering iron</li> <li>• heat-gun or blower</li> <li>• wire and cabling of various colours and sizes</li> <li>• heat shrink sleeving and flexible conduit</li> <li>• terminals and connectors</li> <li>• electrical tape.</li> </ul>
<b><i>Electronic ancillary electrical equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• driver ignition immobiliser interlocks</li> <li>• security alarm and immobiliser systems</li> <li>• infotainment - audio systems</li> <li>• vehicle engine and powertrain performance enhancements</li> <li>• mobile phone interface kits</li> <li>• speed alert and traffic warning systems</li> <li>• integrated navigation systems.</li> </ul>
<b><i>Programming code</i></b> may include:	<ul style="list-style-type: none"> <li>• service programming system</li> <li>• OEM-specific code</li> <li>• ECU flash code or program.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• open circuits</li> <li>• short circuits</li> <li>• damaged insulation</li> <li>• frayed wires</li> <li>• connector damage</li> <li>• terminal damage</li> <li>• diagnosis trouble codes (DTC) being set.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Repair options*** may include:

- pre- and post-repair testing
- identifying and testing components
- diagnosing and determining faults
- component repair procedures, including:
  - removal, replacement and adjustment procedures
  - dismantle, repair, re-assembly and adjustment procedures
- electrical measurements
- visual and functional assessments, including for damage and wear.

***Post-repair testing*** may include:

- validating effectiveness of the repair action
- confirming that reported fault has been rectified
- confirming that no other faults are present as a result of the repair action.

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

# AURETR3028 Diagnose and repair instruments and warning systems

## Modification History

Release	Comment
Release 1	Replaces AURE318966A Repair instruments and warning systems Performance Criteria and Range Statement updated to reflect technologies

## Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair instruments and warning systems fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments. It involves diagnosing deviations from correct operation, repairing vehicle instruments and warning system components and associated systems; and undertaking post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

Application of the unit	<p>Work applies to instruments and warning systems fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair instruments and warning systems	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>1.5. <b>Tools and equipment</b> are identified for effective repair methods</p>
2. Diagnose instruments and warning systems	<p>2.1. <b>Instruments and warning systems</b> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <i>inappropriate testing procedures</i></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair instruments and warning systems	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Prepare vehicle for delivery to customer	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and finalise work processes	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and the work area are cleaned and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>inspected according to workplace procedures</p> <p>5.4.Tools and equipment are maintained according to workplace procedures</p> <p>5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when diagnosing and repairing various instrument and warning systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - determine the underlying causes of faults
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to repairing instrument and warning systems, including:
  - specialist tools and equipment
  - measuring equipment

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- computerised technology
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - codes of practice
  - personal protection needs when working on vehicles in an automotive workshop
  - individual state and territory legislation and regulatory requirements, including:
    - LPG/CNG/LNG systems and components
    - air conditioning and HVAC systems and components
- principal types of vehicle instrument and warning systems, including:
  - hazard flashers
  - horns or alarms
  - driver display instruments
  - reversing alert systems
- application, purpose and operation of instruments and warning systems
- techniques for reading and interpreting automotive technical information, graphic symbols and wiring diagrams
- diagnostic and testing procedures, including:
  - diagnostic procedures for instruments and warning systems, including:
    - accessing and interpreting diagnostic trouble codes
    - diagnostic flow charts
  - analysis of system operation using electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component or connector corrosion
    - component water or moisture ingress
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of vehicle instruments and warning systems
- conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements
- present vehicle or equipment in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with instrument and warning system faults relevant to the qualification being sought
- equipment appropriate for the testing of vehicle instruments and warning systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for repairing, replacing and adjusting vehicle instruments and warning systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace first aid equipment</li> <li>• workplace safety policies and procedures</li> <li>• safe handling of material</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• personal protective clothing and equipment</li> <li>• use of fire-fighting equipment</li> <li>• safe use of tools and equipment.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to repairing and replacing instrument and warning systems</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• obtaining vehicle service history</li> <li>• isolating faults</li> <li>• inspecting and evaluating components.</li> </ul>
<b><i>Tools and equipment</i></b> may	<ul style="list-style-type: none"> <li>• hand tools</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• vehicle lifting devices</li> <li>• power tools</li> <li>• specialist tools for vehicle trim removal and replacement</li> <li>• dynamometer</li> <li>• electronic testing equipment, including: <ul style="list-style-type: none"> <li>• multimeter</li> <li>• oscilloscope</li> <li>• scan tools.</li> </ul> </li> </ul>
<b><i>Instruments and warning systems</i></b> may include:	<ul style="list-style-type: none"> <li>• driver information instruments and gauges</li> <li>• warning lights and dash lamps</li> <li>• engine shutdown systems</li> <li>• audible reverse warning systems in all types of vehicles, craft and equipment.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes:</li> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes <ul style="list-style-type: none"> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• gauge and instrument warning system not working</li> <li>• incorrect gauge and instrument readings</li> <li>• wiring circuit faults, including: <ul style="list-style-type: none"> <li>• open circuit</li> <li>• short circuit</li> <li>• reference circuit</li> <li>• ground earth circuit.</li> </ul> </li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantling, repair, re-assembly and adjustment procedures</li> <li>• fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical short and open circuits</li> <li>• electrical measurements</li> <li>• diagnosing and determining repair requirements and electronic systems data, including fault codes, sensors, actuator measurement, and control unit input and output signals</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• reading and interpreting wiring diagrams.</li></ul>
<i>Post-repair testing</i> may include:	<ul style="list-style-type: none"><li>• validating effectiveness of repair action</li><li>• confirming that reported fault has been rectified</li><li>• confirming that no other faults are present as a result of repair action.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR3029 Diagnose and repair charging systems

### Modification History

Release	Comment
Release 1	Replaces AURE319166B Repair charging systems Performance Criteria and Range Statement updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair charging systems. It involves diagnosing deviations from correct operation, repairing charging system components and associated systems, and undertaking post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to vehicles in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose vehicle charging systems	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>1.5. <b>Tools and equipment</b> are identified for effective repair methods</p>
2. Diagnose vehicle charging systems	<p>2.1. <b>Charging systems</b> are tested to isolate faults according to workplace procedures without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair vehicle charging systems	<p>3.1. <b>Repair options</b> are analysed and those most appropriate are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Prepare vehicle for delivery to customer	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and finalise work processes	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and the work area are cleaned and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>inspected according to workplace procedures</p> <p>5.4.Tools and equipment are maintained according to workplace procedures</p> <p>5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when diagnosing and repairing various charging systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - determine the underlying causes of faults
  - refer problems outside area of responsibility to appropriate person and suggest possible causes or solutions
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use hand, power, measuring and specialised tools relating to the repair of charging systems
- technology skills to:
  - operate diagnostic and automotive test equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements when working with vehicle while either on a hoist, trolley jack or safety stand, including:
  - individual state and territory legislation
  - codes of practice
  - personal protection needs when working on vehicles in an automotive workshop
- application, purpose and operation of charging systems
- principal types of charging systems, including:
  - star connected stator
  - delta connected stator
  - internally or externally regulated
  - magneto
  - generators
- techniques for reading and interpreting automotive technical information, graphic symbols and wiring diagrams
- operating principles of DC and AC motors
- diagnostic and testing procedures, including:
  - diagnostic procedures for charging systems, including:
    - accessing and interpreting diagnostic trouble codes
    - diagnostic flow charts
  - analysis of system operation using electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- select methods and techniques appropriate to the fault being diagnosed
- complete preparatory activity in a systematic manner
- apply and demonstrate knowledge of DC and AC motors
- diagnose and repair a range of charging systems
- conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements
- complete workplace and equipment documents
- clean up work area and maintain equipment to workplace standards.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- a range of alternators, generators and components relevant to

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- the qualification being sought
- vehicles with charging faults relevant to the qualification being sought
- equipment appropriate for the testing of charging systems
- specifications and workplace instructions
- tools appropriate for repairing, replacing and adjusting charging systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• safe work procedures relating to the repair of charging systems</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace first aid equipment</li> <li>• workplace safety policies and procedures</li> <li>• safe handling of material</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• hot surfaces and moving parts and components</li> <li>• personal protective clothing and equipment</li> <li>• use of fire-fighting equipment</li> <li>• safe use of tools and equipment.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace work specifications and requirements</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• safe work procedures relating to repairing and replacing charging systems and components</li> <li>• vehicle service requirements and repair manuals</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches.</li> </ul>
<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• obtaining vehicle service history</li> <li>• isolating faults</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>inspecting and evaluating components.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>hand tools</li> <li>vehicle lifting devices</li> <li>power and air tools</li> <li>specialist tools for removing and replacing charging systems</li> <li>soldering equipment</li> <li>electronic testing equipment, including:               <ul style="list-style-type: none"> <li>multimeter</li> <li>test light</li> <li>load tester</li> <li>inductive ammeter</li> <li>test benches</li> <li>single and ganged panels</li> <li>oscilloscope</li> <li>scan tools.</li> </ul> </li> </ul>
<b><i>Charging systems</i></b> may include:	<ul style="list-style-type: none"> <li>alternators:               <ul style="list-style-type: none"> <li>electromagnetic</li> <li>permanent magnet</li> </ul> </li> <li>generators</li> <li>dynastart, solid state and mechanical regulation</li> <li>belt and/or direct drive, single and multiple belt drives and adjustable tensioning devices</li> <li>single phase, half-wave rectified and full-wave rectified</li> <li>solar systems, including:               <ul style="list-style-type: none"> <li>single and ganged panels</li> <li>internal and external regulation</li> <li>battery sensed and machine sensing regulation</li> <li>6 V, 12 V and 24 V operation</li> </ul> </li> <li>solid state controlled.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes:               <ul style="list-style-type: none"> <li>back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>probing terminal and connectors with inappropriate test</li> </ul> </li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	probes <ul style="list-style-type: none"> <li>pushing sharp probes and objects into wiring insulation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>component malfunction, including:             <ul style="list-style-type: none"> <li>system not charging</li> <li>alternator drive problems</li> <li>regulator malfunction</li> <li>noisy operation</li> <li>seized mechanical components</li> <li>worn mechanical components</li> <li>overrunning clutch pulley faulty</li> </ul> </li> <li>control circuit faults</li> <li>open or short circuits to power, ground and reference circuits</li> <li>high circuit resistance</li> <li>DTC failure codes.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>component repair procedures, including:             <ul style="list-style-type: none"> <li>removal, replacement and adjustment procedures</li> <li>dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>validating effectiveness of the repair action</li> <li>confirming that reported fault has been rectified</li> <li>confirming that no other faults are present as a result of the repair action.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR3030 Diagnose and repair starting systems

### Modification History

Release	Comment
Release 1	Replaces AURE319166B Repair charging systems Performance Criteria and Range Statement updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair starting systems. It involves diagnosing deviations from correct operation, repairing starting system components and associated systems, and undertaking post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to vehicles in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose vehicle starting system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>1.5. <b>Tools and equipment</b> are identified for effective repair methods</p>
2. Diagnose vehicle starting system	<p>2.1. <b>Starting systems</b> are tested to isolate faults according to workplace procedures without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair vehicle starting system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Prepare vehicle for delivery to customer	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and finalise work processes	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and the work area are cleaned and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>inspected according to workplace procedures</p> <p>5.4.Tools and equipment are maintained according to workplace procedures</p> <p>5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when diagnosing and repairing various starting systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - determine the underlying causes of faults
  - refer problems outside area of responsibility to appropriate person and suggest possible causes or solutions
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use hand, power, measuring and specialised tools relating to the repair of starting systems
- technology skills to:
  - operate diagnostic and automotive test equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements when working with vehicle while either on a hoist, trolley jack or safety stand, including:
  - individual state and territory legislation
  - codes of practice
  - personal protection needs when working on vehicles in an automotive workshop
- application, purpose and operation of starting systems
- principal types of starting systems, including:
  - direct drive
  - solenoid pre-engaged, including:
    - reduction
    - spark ignition systems
    - compression ignition systems
  - control circuit, including:
    - key start
    - push button start
    - remote start
- techniques for reading and interpreting automotive technical information, graphic symbols and wiring diagrams
- operating principles of DC and AC motors
- diagnostic and testing procedures, including:
  - diagnostic procedures for starting systems, including:
    - typical starting system faults and their symptoms
    - accessing and interpreting diagnostic trouble codes (DTCs)
    - diagnostic flow charts
  - analysis of system operation using electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- select methods and techniques appropriate to the fault being diagnosed
- complete preparatory activity in a systematic manner
- apply and demonstrate knowledge of DC and AC motors
- diagnose and repair a range of starting systems
- conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements
- clean up work area and maintain equipment to workplace standards.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- a range of starter motors and components relevant to the qualification being sought

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- vehicles with starting faults relevant to the qualification being sought
- equipment appropriate for the testing of starting systems
- specifications and workplace instructions
- tools appropriate for repairing, replacing and adjusting starting systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• safe work procedures relating to the repair of starting systems</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace first aid equipment</li> <li>• workplace safety policies and procedures</li> <li>• safe handling of material</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• hot surfaces and moving parts and components</li> <li>• personal protective clothing and equipment</li> <li>• use of fire-fighting equipment</li> <li>• use of tools and equipment.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace work specifications and requirements</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• safe work procedures relating to repairing and replacing starting systems and components</li> <li>• vehicle service requirements and repair manuals</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches.</li> </ul>
<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• obtaining vehicle service history</li> <li>• isolating faults</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>inspecting and evaluating components.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>hand tools</li> <li>vehicle lifting devices</li> <li>power and air tools</li> <li>specialist tools for removal and replacement</li> <li>soldering equipment</li> <li>electronic testing equipment, including:               <ul style="list-style-type: none"> <li>multimeter</li> <li>test light</li> <li>load tester</li> <li>inductive ammeter</li> <li>test benches</li> <li>oscilloscope</li> <li>scan tools.</li> </ul> </li> </ul>
<b><i>Starting systems</i></b> may include:	<ul style="list-style-type: none"> <li>dynastart</li> <li>inertia</li> <li>pre-engaged</li> <li>axial and coaxial</li> <li>fixed and remote solenoid</li> <li>direct drive</li> <li>gear reduction</li> <li>protection lockout</li> <li>inhibitor switch</li> <li>series-parallel switching</li> <li>battery isolation switch</li> <li>single/multiple battery system</li> <li>permag starter motors</li> <li>DC and AC motors.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes:               <ul style="list-style-type: none"> <li>back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>probing terminal and connectors with inappropriate test probes</li> </ul> </li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>pushing sharp probes and objects into wiring insulation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>component malfunction, including:               <ul style="list-style-type: none"> <li>low battery voltage</li> <li>discharged battery</li> <li>excessive voltage drop</li> <li>noisy operation</li> <li>seized mechanical components</li> <li>worn mechanical components</li> <li>failure to engage drive pinion</li> </ul> </li> <li>control circuit faults</li> <li>open or short circuits to power, ground and reference circuits</li> <li>high circuit resistance</li> <li>DTC being set.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>component repair procedures, including:               <ul style="list-style-type: none"> <li>removal, replacement and adjustment procedures</li> <li>dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>validating effectiveness of the repair action</li> <li>confirming that reported fault has been rectified</li> <li>confirming that no other faults are present as a result of the repair action.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR3031 Diagnose and repair ignition systems

### Modification History

Release	Comment
Release 1	Replaces AURE320666B Repair ignition systems Performance Criteria and Range Statement updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair ignition systems. It involves diagnosing deviations from correct operation, repairing ignition system components and associated systems, and undertaking post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to basic ignition and electronic ignition (EI) systems fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work does not apply to ignition systems associated with engine management systems.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair ignition systems	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>1.5. <b>Tools and equipment</b> are identified for effective repair methods</p>
2. Diagnose ignition systems	<p>2.1. <b>Basic ignition and electronic ignition systems</b> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair ignition systems	<p>3.1. <b>Repair options</b> are analysed and those most appropriate are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Prepare vehicle and equipment for delivery to customer after repair is completed	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>
5. Clean up work area and finalise work processes	<p>5.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>5.2. Waste and scrap are removed according to workplace practices</p> <p>5.3. Tools, equipment and the work area are cleaned and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>inspected according to workplace procedures</p> <p>5.4.Tools and equipment are maintained according to workplace procedures</p> <p>5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when diagnosing and repairing various basic ignition and EI systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - determine the underlying causes of faults
- refer problems outside area of responsibility to appropriate person and suggest possible causes
- seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use hand, power, measuring and specialised tools relating to the repair of ignition systems
- technology skills to:
  - operate diagnostic and test equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - individual state and territory legislation
  - codes of practice
  - personal protection needs
- principal types of vehicle basic ignition and EI systems, including:
  - kettering
  - magneto
  - distributor
  - waste spark
- application, purpose and operation of basic ignition and EI systems, including:
  - ignition coil construction and operation:
    - transformer principles of operation
    - self-induced voltage and condenser effect on output
  - vehicle demands on ignition system
  - ignition switching and triggering, including dwell, firing order, timing, advances, current control and dwell extensions
  - magnetic inductive, hall effect and optical switching
- techniques for reading and interpreting technical information, graphic symbols and diagrams
- diagnostic and testing procedures, including:
  - diagnostic procedures for basic ignition and EI systems, including:
    - accessing and interpreting diagnostic trouble codes (DTCs)
    - diagnostic flow charts
  - analysis of system operation using electrical test equipment, current measurement, scan tools, oscilloscopes and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- apply and demonstrate knowledge of ignition system operation, including dwell, current and timing control in all systems
- diagnose and repair a range of vehicle basic ignition and EI systems
- conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements
- present vehicle and equipment in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- a range of ignition system and components relevant to the qualification being sought

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- vehicles with basic ignition and EI faults relevant to the qualification being sought
- equipment appropriate for the testing of vehicle basic ignition and EI systems
- specifications and workplace instructions
- tools appropriate for repairing, replacing and adjusting vehicle basic ignition and EI systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety requirements</b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• hazards associated with high voltage ignition systems</li> <li>• use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to repairing and replacing basic ignition and EI systems</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b>Options for diagnosing faults</b> may include:	<ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• component inspection and evaluation.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters, ammeters, voltmeters and tachometers</li> <li>• timing light</li> <li>• spark plug testers</li> <li>• insulation testers</li> <li>• power tools and air tools</li> <li>• tune scopes</li> <li>• engine analysers</li> <li>• dynamometers</li> <li>• distributor test bench.</li> </ul>
<b><i>Basic ignition and electronic ignition systems</i></b> may include:	<ul style="list-style-type: none"> <li>• single and dual points</li> <li>• transistor assisted</li> <li>• single and multiple distributors</li> <li>• ballast and non-ballast primary circuits</li> <li>• suppressed and non-suppressed high-tension leads</li> <li>• magneto</li> <li>• capacitor discharge ignition (CDI) systems</li> <li>• transistor controlled ignition (TCI) systems</li> <li>• electronic spark timing (EST) systems</li> <li>• advance mechanisms: mechanical, vacuum, electronic, magnetic pulse, optic and hall effect</li> <li>• spark plug, resistor plug and cap.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• engine difficult to start or will not start</li> <li>• engine misfiring</li> <li>• poor engine performance</li> <li>• engine knock</li> <li>• overheating</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• DTC being set.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• pre- and post-repair testing</li> <li>• identifying and testing components</li> <li>• diagnosing and determining faults</li> <li>• component repair procedures, including:               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures</li> </ul> </li> <li>• electrical measurements</li> <li>• peak voltage testing</li> <li>• visual and functional assessments, including for damage and wear.</li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• validating effectiveness of the repair action</li> <li>• confirming that reported fault has been rectified</li> <li>• confirming that no other faults are present as a result of the repair action.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR3032 Repair electrical systems

### Modification History

Release	Comment
Release 1	Replaces AURE318866A Repair electrical systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to carry out repairs to vehicle/equipment electrical systems, including accessories, wipers, electric windows, lighting, turning indicators, hazard lights, door locks and fan blowers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing of systems and identification of faults/causes, repair and retesting of electrical systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>For minor electrical repairs see AURETR2012 Test and repair basic electrical circuits.</p> <p>For repairs to electrical marine systems see AURRTE3005 Diagnose and repair marine electrical systems and components.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method, process and equipment 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal safety needs, are observed throughout the work 1.4. Equipment and tooling are identified and checked for safe and effective operation 1.5. Procedures are determined to minimise task time
2. Test systems/ components and identify faults	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Tests are carried out to determine faults using tooling and techniques 2.3. Systems/components are tested without causing damage to component or system 2.4. Faults are identified and preferred repair action determined 2.5. Tests are carried out according to industry regulations/ guidelines, WHS, legislation and enterprise procedures/policies
3. Repair electrical systems	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Repairs, component replacement and adjustments are carried out using tooling, techniques and materials 3.3. Repairs to electrical systems are completed without causing damage to component or system 3.4. Retests are carried out to ensure correct and safe electrical system operation 3.5. Repairs and retests are carried out according to industry regulations/guidelines, WHS, legislation and enterprise procedures/policies 3.6. Workplace and equipment documents are completed in accordance with site requirements
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored 4.2. Waste and scrap is removed following workplace procedures 4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures 4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements

ELEMENT	PERFORMANCE CRITERIA
	<p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</p> <p>4.6.Tooling and equipment is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for circuit and component testing, and major repairs/component replacement
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information of electrical circuit/component testing, servicing and replacement procedures
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete tests and measurements to determine electrical circuit/component major repair/replacement requirements
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform electrical testing, and repair/replacement procedures
- problem-solving skills for a range of procedural issues
- use workplace technology related to the repair of electrical systems, including use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operation of electrical system/components relevant to application
- motor principles/magnetism
- types and layout of service/repair manuals (hard copy and electronic)
- procedures for the repair/replacement of electrical systems/components
- testing and diagnosis procedures of electrical system/component faults
- wiring repair procedures
- work organisation and planning processes

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing and identifying open circuits, short circuits and earthing faults in electrical systems
- repairing/replacing electrical systems/components to site and manufacturer/component supplier requirements
- completing workplace and equipment documents.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to repairing electrical systems
- equipment and hand and power tooling appropriate to repairing electrical systems
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry RS&R Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electrical systems</b>	Electrical systems may include: <ul style="list-style-type: none"> <li>accessories, wipers, electric windows, door locks and fan blowers applicable to all equipment, including light, heavy, motorcycles, marine and outdoor power equipment</li> </ul>
<b>Faults</b>	Faults are to include: <ul style="list-style-type: none"> <li>electrical unit faults, wire repair/replacement, open circuits, short circuits and earthing</li> </ul>
<b>Systems</b>	Systems include; electrical systems fitted to all vehicles including motorcycles, marine and outdoor power equipment applicable to electrical measurements
<b>Repair methods</b>	Repair methods include: <ul style="list-style-type: none"> <li>fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects, reading/interpreting wiring diagrams, diagnosing and determining faults, soldering, crimping, repairing components and wiring, remove/replace components, and may include repairing 12/24 V electric motors</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to</li> </ul>

<b>RANGE STATEMENT</b>	
	others and site visitors
<b>Emergency procedures</b>	Emergency procedures are to include, but may not be limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling, testing equipment, including multimeters, power tooling, air tooling, specialist tooling for removal/adjustment, manufacturer/component suppliers' diagnostic tooling, oscilloscopes and scan tooling</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts, lubricants, fluids and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of electrical systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR3036 Service and repair electronically controlled suspension systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURE320971A Service and repair electronically controlled suspension systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to locate and repair faults in electronically controlled suspension systems, including ride control systems and height control systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, servicing and adjusting of systems, repair of faults, retesting of systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including quality, material, equipment quantities and service manuals 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal protection needs, are observed throughout the work 1.4. Electronic system protection devices, processes and precautions are identified appropriate to the application 1.5. Equipment and tooling are identified and checked for safety and correct operation 1.6. Procedures to minimise task time are identified
2. Service and adjust electronically controlled suspension systems	2.1. Service information is accessed and interpreted prior to commencing servicing procedures 2.2. Current status and previous fault history of electronic suspension system is determined in conjunction with the customer 2.3. Current status of electronic system is confirmed through a road test program 2.4. Electronic system is serviced in accordance with manufacturer/component supplier specifications and enterprise procedures 2.5. Fluids and lubricants are used in accordance with WHS and manufacturer/component supplier specifications 2.6. Used fluids and lubricants are disposed of according to enterprise and WHS requirements
3. Rectify identified electronically controlled suspension system faults	3.1. Road test results are interpreted to verify system fault diagnosis 3.2. Customer is notified of identified faults and agreement is given before work is carried out 3.3. Faulty components are removed and refitted with approved replacement parts in accordance with workplace procedures and customer requirements 3.4. Faulty components are disposed of in accordance with workplace procedures and warranty requirements 3.5. System adjustments are completed for components replaced
4. Test and confirm system faults have been rectified	4.1. Test procedures are carried out to confirm rectification of system faults 4.2. Documentation is completed in accordance with workplace/customer requirements

ELEMENT	PERFORMANCE CRITERIA
	4.3.Outcomes of rectification work are explained to the satisfaction of the customer to enable invoicing documentation to be completed
5. Clean up work area and maintain equipment	5.1.Material that can be reused is collected and stored 5.2.Waste and scrap is removed according to workplace procedures 5.3.Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures 5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures 5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures 5.6.Tooling is maintained in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for circuit and component testing, and major repairs/component replacement
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information on electrical circuit/component testing, servicing and replacement procedures
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete tests and measurements to determine electrical circuit/component major repair/replacement requirements
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform electrical testing, and repair/replacement procedures
- problem-solving skills for a range of procedural issues
- use workplace technology related to the service and repair of electronically controlled suspension systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirement, equipment, material and personal safety requirements
- operating principles of electronically controlled suspension systems
- construction and operation of electronically controlled suspension systems
- relationship to other electronically controlled system(s), including shared components (e.g. ECU, sensors) test, diagnosis and fault determination procedures
- types and layout of service/repair manuals (hard copy and electronic)
- service/repair, removal, replacement and adjustment procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- post-repair test procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- servicing and adjusting electronic suspension systems to manufacturer/component supplier requirements
- determining repair/replacement requirements to rectify faults
- repairing/rectifying faults in electronic suspension systems to manufacturer/component supplier requirements
- testing, inspecting and evaluating suspension system/components to manufacturer/component supplier requirements
- completing workplace and equipment documents.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and repair of electronically controlled suspension systems
- equipment, hand and power tooling appropriate to the service and repair of electronically controlled suspension systems
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines

**EVIDENCE GUIDE**

	<p>of the Automotive Industry RS&amp;R Training Package</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li><li>• Assessment may be applied under project related conditions and require evidence of process</li><li>• Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electronically controlled suspension systems</b>	Electronically controlled suspension systems include: <ul style="list-style-type: none"> <li>those fitted to light and heavy vehicles and include side control and side height</li> </ul>
<b>Diagnose and determine faults</b>	Methods include: <ul style="list-style-type: none"> <li>diagnosis and determining faults, pre- and-post-service/repair testing of system and component operation, service and repair/replacement of system components, service and repair adjustments, removal, dismantling, reassembly and refitting, testing system operations, retrieval and assessment of electronic systems data, including fault codes</li> </ul>
<b>Faults</b>	Faults may include: <ul style="list-style-type: none"> <li>component malfunction, system adjustment, open and short circuits</li> </ul>
<b>Critical precautions</b>	Critical precautions, including manufacturer/component supplier procedures, must be applied as poor working practices are likely to damage electronic system ECUs and/or other components
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state and local authorities administering the acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling, testing equipment, including multimeters, power tooling, air tooling, specialist tooling for removal/adjustment, oscilloscopes, scan tooling and LED test lights</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts, lubricants, fluids and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the service and repair of electronically controlled suspension systems</li> <li>• Regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR3043 Service and repair electronic body management systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURE321371A Service and repair electronic body management systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to service/repair electronic body management systems and/or associated components which include engine immobilisation, central locking, power windows, electric mirrors, electronic seat adjustment with memory and security systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and diagnosis of faults, servicing, repair and retesting of systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including quality, material, equipment quantities and service manuals 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal protection needs, are observed throughout the work 1.4. Electronic system protection devices, processes and precautions are identified appropriate to the application 1.5. Equipment and tooling are identified and checked for safety and correct operation 1.6. Procedures are identified to minimise task time
2. Test control system, diagnose faults and determine service/repair requirements	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Tests are carried out according to manufacturer/component supplier recommended procedures using tooling, equipment and techniques 2.3. Testing is completed without causing damage to component or system 2.4. Test results are used to diagnose system/component faults 2.5. Service/repair requirements are determined 2.6. Testing is carried out according to industry regulations/guidelines WHS and enterprise/procedures policies
3. Service/repair body management systems	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Service/repair requirements are carried out according to manufacturer/component supplier recommended specifications and procedures 3.3. Service/repair is completed without causing damage to component or system 3.4. Electronic systems are tested and results are documented in accordance with workplace policies and procedures 3.5. Service, repair and retesting are carried out according to industry regulations/guidelines, WHS and enterprise/procedures policies 3.6. Workplace and equipment documents are completed in accordance with site requirements
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored 4.2. Waste and scrap are removed following workplace procedures

ELEMENT	PERFORMANCE CRITERIA
	<p>4.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</p> <p>4.6. Tooling is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for servicing, repairing and testing electronic body management systems
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the service and repair of electronic body management systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirement, equipment, material and personal safety requirements
- operating principles of electronic body management systems
- construction and operation of electronic body management systems
- types and layout of service/repair manuals (hard copy and electronic)
- relationship to other electronically controlled systems, including shared components (e.g. ECU, sensors)
- testing, diagnosis and fault determination procedures
- servicing/repairing, removal, replacement and adjustment procedures relevant to application
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing, inspecting and evaluating electronic body management systems/components
- diagnosing and determining the repair/replacement requirements to rectify faults
- servicing/repairing electronic body management systems to manufacturer/component supplier requirements
- completing the work within agreed time
- completing workplace and equipment documents.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and repair of electronic body management systems
- equipment, hand and power tooling appropriate to the service and repair of electronic body management systems
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry RS&R Training Package

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electronic body management systems</b>	Electronic body management systems may control the following functions: <ul style="list-style-type: none"> <li>engine immobilisation, central locking, power windows, electric mirrors, electronic seat adjustment with memory and security systems</li> </ul>
<b>Fittings</b>	Electronic body management systems include those fitted to light vehicles and/or heavy commercial vehicles and/or plant and equipment and/or outdoor power equipment
<b>Functions</b>	Electronic body management may control the following functions: <ul style="list-style-type: none"> <li>engine immobilisation, central locking, power windows, electric mirrors, electronic seat adjustment with memory and security systems</li> </ul>
<b>Service and repair methods</b>	Service and repair methods include: <ul style="list-style-type: none"> <li>identifying, measuring and interpreting inputs and outputs, diagnosis and determining faults, pre- and post-repair testing of system and component operation, service and repair/replacement of system components, service and repair adjustments, removal, dismantling, reassembly and refitting, testing system operations and retrieval and assessment of electronic systems data, including fault codes</li> </ul>
<b>Faults</b>	Faults may include: <ul style="list-style-type: none"> <li>component or system malfunction</li> </ul>
<b>Critical precautions</b>	Critical precautions, including manufacturer/component supplier procedures, must be applied as poor working practices are likely to damage electronic system ECUs and/or other components
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering the acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>hand tooling, testing equipment, including multimeters, power tooling, air tooling, specialist tooling for removal/adjustment, specialised system testers, oscilloscope, scan tooling and LED test lights</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>spare parts and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material</li> </ul>

**RANGE STATEMENT**

	<p>safety data sheets, diagrams or sketches</p> <ul style="list-style-type: none"><li>• safe work procedures related to the service and repair of electronic body management systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR3044 Service and repair electronic drive management systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURE321271A Service and repair electronic drive management systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to service/repair electronic drive management systems and/or associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and diagnosis of faults, servicing, repair and retesting of systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements including methods, processes and equipment 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal protection needs, are observed throughout the work 1.4. Electronic system protection devices, processes and precautions are identified appropriate to the application 1.5. Equipment and tooling are identified and checked for safety and correct operation 1.6. Procedures are identified to minimise task time
2. Test control system, diagnose faults and determine service/repair requirements	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Tests are carried out according to manufacturer/component supplier recommended procedures using tooling, equipment and techniques 2.3. Testing is completed without causing damage to component or system 2.4. Test results are used to diagnose system/component faults 2.5. Service/repair requirements are determined 2.6. Testing is carried out according to industry regulations/guidelines WHS and enterprise/procedures policies
3. Service/repair drive management systems	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Service/repair requirements are carried out according to manufacturer/component supplier recommended specifications and procedures 3.3. Service/repair is completed without causing damage to component or system 3.4. Electronic systems are tested and results are documented in accordance with workplace policies and procedures 3.5. Service, repair and retesting are carried out according to industry regulations/guidelines, WHS and enterprise/procedures policies 3.6. Workplace and equipment documents are completed in accordance with site requirements
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored 4.2. Waste and scrap are removed following workplace procedures

ELEMENT	PERFORMANCE CRITERIA
	<p>4.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures</p> <p>4.6. Tooling is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for servicing, repairing and testing electronic drive management systems
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the service and repair of electronic drive management systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirement, equipment, material and personal safety requirements
- operating principles of electronic drive management systems
- construction and operation of electronic drive management systems
- types and layout of service/repair manuals (hard copy and electronic)
- relationship to other electronically controlled systems, including shared components (e.g. ECU, sensors)
- testing, diagnosis and fault determination procedures
- servicing/repairing, removal, replacement and adjustment procedures relevant to application
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing, inspecting and evaluating electronic drive management systems
- diagnosing and determining the repair/replacement requirements to rectify faults
- servicing/repairing electronic drive management systems to manufacturer/component supplier requirements
- completing mandatory service and repair methods listed in the range statement
- completing the work within agreed time
- completing workplace and equipment documents.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and repair of electronic drive management systems
- equipment, hand and power tooling appropriate to the service and repair of electronic drive management systems
- activities covering mandatory task requirements
- specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry RS&R Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Drivelines</b>	Electronic control automatic transmissions and 4WD drivelines, such as automatic free wheeling hubs, differentials and axle locks
<b>Electronic drive management systems</b>	Electronic drive management systems include: <ul style="list-style-type: none"> <li>electronically controlled automatic transmissions and electronically controlled 4WD drivelines, such as automatic free wheeling hubs, differentials and anti lock braking systems</li> </ul>
<b>Fittings</b>	Electronic drive management systems may be fitted to light vehicles, plant, heavy vehicles and outdoor power equipment
<b>Service and repair methods</b>	Service and repair methods include: <ul style="list-style-type: none"> <li>diagnosis and determining faults, pre- and post-repair testing of system and component operation, service and repair/replacement of system components, service and repair adjustments, removal, dismantling, reassembly and refitting, retrieval and assessment of electronic systems data, including fault codes</li> </ul>
<b>Critical precautions include</b>	Critical precautions include: <ul style="list-style-type: none"> <li>manufacturer/component supplier procedures which must be applied as poor working practices are likely to damage electronic system ECU and/or other components</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>the conduct of operational risk assessment and treatments</li> </ul>

<b>RANGE STATEMENT</b>	
	associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not be limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering the acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling, testing equipment, including multimeters, power tooling, air tooling, specialist tooling for removal/adjustment and specialist system testers</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the service and repair of electronic drive management systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURETR4004 Diagnose complex electrical and electronic faults in vehicle convenience and entertainment systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in vehicle convenience and entertainment systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical or electronic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of vehicle convenience and entertainment systems of motorcycles, light vehicles, heavy commercial vehicles, and vehicles in the mining, construction, agricultural and marine environments.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <b>vehicle convenience and entertainment systems</b> are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, equipment and system isolation requirements, and personal protection needs are observed and applied throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> with vehicle convenience and entertainment systems are identified and confirmed from direct and/or indirect evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace requirements and practices</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to vehicle convenience and entertainment systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of vehicle convenience and entertainment systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of vehicle convenience and entertainment systems
- types, functions and operations of vehicle convenience and entertainment systems
- theory of diagnosis, including concept, design and planning
- electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetics, inductance, discrete electronic components, logic families and radio frequency, discrete electronic components, DC motors and solenoids
- types, functions, operations and limitations of diagnostic testing equipment related to vehicle convenience and entertainment systems
- methods and processes for documenting and reporting diagnostic findings and recommendations

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• interpret workplace instructions and locate and apply information</li> <li>• apply safety requirements, including the use of personal protective equipment</li> <li>• identify and select appropriate diagnosis processes to be performed</li> <li>• complete diagnosis of complex faults on a minimum of three different vehicle convenience and entertainment systems or components with real or simulated faults</li> <li>• document and report outcomes and required actions of diagnosis of complex faults in vehicle convenience and entertainment systems.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles with real or simulated vehicle convenience and</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

entertainment system faults

- tools and equipment appropriate for the diagnosis of complex faults in vehicle convenience and entertainment systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Vehicle convenience and entertainment systems</i></b> may include:	<ul style="list-style-type: none"> <li>• telematic controls and multimedia or wheels, vehicle acoustics, tilt/trim, winch, voltage reducers, voltage inverters, central locking, power windows, sun roof, seat positioning, mirror positioning, steering wheel positioning, seatbelt positioning and multi-class bi-directional universal switch (BUS) systems</li> <li>• audio and visual units, compact discs, analogue tapes, radios, speaker types, amplifiers, crossovers, balancers and aerials.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• electrical and electronic failures</li> <li>• direct faults in input sensors, output actuators, wiring harnesses or computer systems</li> <li>• indirect faults caused by the influence of external electrical and electronic systems, which may or may not be faulty in their primary operations.</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>• wiring and connector integrity</li> <li>• operation and specification of input and output devices</li> <li>• controlling electronic components and computers</li> <li>• sound quality</li> <li>• tests to voltage reducers and voltage inverters</li> <li>• data interpretation and readings relating to direct, indirect and intermittent causes.</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• analogue and digital multimeters</li> <li>• lab oscilloscopes</li> <li>• scan tools</li> <li>• test lights and test LEDs</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• manufacturer and component supplier testing equipment.</li> </ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures relating to vehicle convenience and entertainment systems</li> <li>• six-step troubleshooting plan</li> <li>• component replacement</li> <li>• discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR4037 Diagnose complex electrical and electronic faults in light vehicle safety systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in light vehicle safety systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <i>light vehicle safety systems</i> are accessed and interpreted</p> <p>1.3. <i>Workplace health and safety (WHS) requirements</i>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <i>faults</i> in light vehicle safety systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <i>tests</i> and testing process are identified and selected from the range of available options</p> <p>2.4. <i>Testing equipment</i> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <i>diagnostic processes</i> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to light vehicle safety systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of light vehicle safety systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical and pneumatic systems related to light vehicle safety systems
- concepts, principles and processes involved in planning and implementing systems diagnosis
- types, functions, operations and limitations of light vehicle safety systems
- electrical theory and operation of automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance, discrete electronic components, logic families and radio frequency
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to light vehicle safety systems
- testing procedures for light vehicle safety systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• interpret workplace instructions and locate and apply information</li> <li>• apply safety requirements, including the use of personal protective equipment</li> <li>• identify and select appropriate diagnosis processes to be performed</li> <li>• complete diagnosis of complex faults on a minimum of three different light vehicle safety systems with real or simulated faults</li> <li>• document and report outcomes and required actions of diagnosis of complex faults in light vehicle safety systems.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles systems with real or simulated light vehicle safety system faults</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- tools and equipment appropriate for the diagnosis of complex faults in light vehicle safety systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Light vehicle safety systems*** may include:

- fire suppressing
- work load detecting
- tyre pressure control
- speed and load limiting
- traction control
- seatbelt pre-tensioning
- roll-over protection
- object detection
- navigation aids
- intelligent transport systems
- intelligent supplementary restraint systems (SRS)
- adaptive cruise control
- multi-class bi-directional universal switch (BUS) systems
- active and passive collision avoidance
- infra-red vision
- lighting and windscreen wiper control.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
  - safety management systems, including equipment and system isolation requirements
- hazard control, including control of hazardous materials and toxic substances

***Faults*** may include:

- electrical and electronic failures
- direct faults in input sensors, output actuators, wiring harnesses or computer systems
- calibration or adjustment specifications, component specifications and component assembly
- component damage and system modifications

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>indirect faults caused by the influence of electrical and electronic external systems, which may or may not be faulty in their primary operations.</li> </ul>
<b>Tests</b> may include:	<ul style="list-style-type: none"> <li>wiring and connector integrity</li> <li>operator and specification of input and output devices</li> <li>controlling electronic components and computers</li> <li>data interpretation</li> <li>readings relating to direct, indirect and intermittent causes.</li> </ul>
<b>Testing equipment</b> may include:	<ul style="list-style-type: none"> <li>analogue and digital multimeters</li> <li>lab oscilloscopes</li> <li>scan tools</li> <li>test lights and test LEDs</li> <li>pulse generators</li> <li>manufacturer and component supplier testing equipment.</li> </ul>
<b>Diagnostic processes</b> may include:	<ul style="list-style-type: none"> <li>analysing manufacturer and component supplier specifications, schematics and operational procedures relating to light vehicle safety systems</li> <li>six-step troubleshooting plan</li> <li>discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR4038 Diagnose complex faults in motorcycle electrical and electronic systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in motorcycle electrical and electronic systems in order to initiate action to service, repair, replace, or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical or electronic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of electrical and electronic systems of motorcycles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning motorcycle electrical and electronic systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, equipment and system isolation requirements, and personal protection needs are observed and applied throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> with motorcycle electrical and electronic systems are identified and confirmed from direct and/or indirect evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace requirements and practices</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to motorcycle electrical and electronic systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of motorcycle electrical and electronic systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance
- types, function, operations and limitations of motorcycle electrical and electronic systems and components
- theory of diagnosis, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment relating to motorcycle electrical and electronic systems
- testing procedures motorcycle electrical and electronic systems, including procedures for accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different motorcycle electrical and electronic systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in motorcycle electrical and electronic systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles with real or simulated electrical and electronic

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

	<p>system faults</p> <ul style="list-style-type: none"> <li>tools and equipment appropriate for the diagnosis of complex faults in motorcycle electrical and electronic systems</li> <li>technical reference information and workplace instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
  - safety management systems, including equipment and system isolation requirements
- hazard control, including control of hazardous materials and toxic substances

***Faults*** may include:

- lighting, ignition, charging, fuel injection, anti-lock braking system (ABS), engine management and safety lock-out system faults
- component damage and system modifications
- indirect faults caused by the influence of external electrical and electronic systems, which may or may not be faulty in their primary operations.

***Tests*** may include:

- wiring and connector integrity
- operator and specification of input and output devices
- controlling electronic components and computers
- data interpretation
- readings relating to direct, indirect and intermittent causes.

***Testing equipment*** may include:

- vacuum gauges
- engine emission testers
- fuel pressure and flow meters
- injector testers
- magnetic coil condenser testers
- peak voltage meters
- analogue and digital multimeters
- lab oscilloscopes
- scan tools
- test lights and test LEDs

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• manufacturer and component supplier testing equipment.</li> </ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures relating to motorcycle electrical and electronic system faults</li> <li>• six-step troubleshooting plan</li> <li>• discover-investigate-fix methodology.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURETR4039 Diagnose complex electrical and electronic faults in light vehicle theft deterrent systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in light vehicle theft deterrent systems in order to initiate action to service, repair or replace them, or to improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical or electronic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of theft deterrent systems of light vehicles, four wheel drive and light commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <i>light vehicle theft deterrent systems</i> are accessed and interpreted</p> <p>1.3. <i>Workplace health and safety (WHS) requirements</i>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <i>faults</i> in light vehicle theft deterrent systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <i>tests</i> and testing process are identified and selected from the range of available options</p> <p>2.4. <i>Testing equipment</i> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <i>diagnostic processes</i> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to light vehicle theft deterrent systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of light vehicle theft deterrent systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, electrical and electronic systems related to light vehicle theft deterrent systems
- types, functions, operations and limitations of light vehicle theft deterrent systems
- types, functions, operations and limitations of electromechanical and electronic subsystems in light vehicle theft deterrent systems
- electrical theory and operation of automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance, discrete electronic components, logic families and radio frequency
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to light vehicle theft deterrent systems
- methods and processes for documenting and reporting diagnostic findings and recommendations

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• interpret workplace instructions and locate and apply information</li> <li>• apply safety requirements, including the use of personal protective equipment</li> <li>• identify and select appropriate diagnosis processes to be performed</li> <li>• complete diagnosis of complex faults on a minimum of three different light vehicle theft deterrent systems with real or simulated faults</li> <li>• document and report outcomes and required actions of diagnosis of complex faults in light vehicle theft deterrent systems.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles systems with real or simulated light vehicle theft</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

deterrent systems faults

- tools and equipment appropriate for the diagnosis of complex faults in light vehicle theft deterrent systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Light vehicle theft deterrent systems</i></b> may include:	<ul style="list-style-type: none"> <li>• remote keyless entry (RKE)</li> <li>• immobiliser system design</li> <li>• passive entry systems</li> <li>• two-way RKE</li> <li>• fingerprint technologies</li> <li>• rolling codes</li> <li>• transmitter and receiver operation</li> <li>• satellite systems.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• electrical and electronic failures</li> <li>• direct faults in input sensors, output actuators, wiring harnesses or computer systems</li> <li>• calibration or adjustment specifications, component specifications and component assembly</li> <li>• component damage and system modifications</li> <li>• indirect faults caused by the influence of electrical and electronic external systems, which may or may not be faulty in their primary operations.</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>• wiring and connector integrity</li> <li>• operation and specification of input and output devices</li> <li>• controlling electronic components and computers</li> <li>• data interpretation</li> <li>• readings relating to direct, indirect and intermittent causes.</li> </ul>
<b><i>Testing equipment</i></b> may	<ul style="list-style-type: none"> <li>• analogue and digital multimeters</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• lab oscilloscopes</li> <li>• data scanners</li> <li>• test lights and test LEDs</li> <li>• manufacturer and component supplier testing equipment.</li> </ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures relating to light vehicle theft deterrent systems</li> <li>• six-step troubleshooting plan</li> <li>• component replacement</li> <li>• discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR4040 Diagnose complex electrical and electronic faults in vehicle monitoring and protection systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in vehicle monitoring and protection systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical or electronic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of vehicle monitoring and protection systems of motorcycles, light vehicles, heavy commercial vehicles, and vehicles in the mining, construction, agricultural and marine environments.</p> <p>Work applies to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <b>vehicle monitoring and protection systems</b> are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, equipment and system isolation requirements and personal protection needs, are observed and applied throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in vehicle monitoring and protection systems are identified and confirmed from direct or indirect evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to vehicle monitoring and protection systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of vehicle monitoring and protection systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to vehicle monitoring and protection systems
- concepts, types, functions, operations and limitations of vehicle monitoring and protection systems
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to vehicle monitoring and protection systems
- testing procedures for vehicle monitoring and protection systems, including procedures for accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• interpret workplace instructions and locate and apply information</li> <li>• apply safety requirements, including the use of personal protective equipment</li> <li>• identify and select appropriate diagnosis processes to be performed</li> <li>• complete diagnosis of complex faults on a minimum of three different vehicle monitoring and protection systems with real or simulated faults</li> <li>• document and report outcomes and required actions of diagnosis of complex faults in vehicle monitoring and protection systems.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles with real or simulated monitoring and protection</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

system faults

- tools and equipment appropriate for the diagnosis of complex faults in vehicle monitoring and protection systems
- technical reference information and workplace instructions..

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Vehicle monitoring and protection systems</i></b> may include:	<ul style="list-style-type: none"> <li>display types, including: <ul style="list-style-type: none"> <li>liquid crystal display (LCD)</li> <li>vacuum fluorescent display (VFD)</li> <li>cathode ray tube (CRT)</li> <li>heads-up display (HUD)</li> </ul> </li> <li>reconfigurable systems</li> <li>electronic analogue display</li> <li>on-board diagnostics</li> <li>remote and wireless monitoring systems</li> <li>multi-class bi-directional universal switch (BUS) systems.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>may include: <ul style="list-style-type: none"> <li>protective clothing and equipment</li> <li>use of tools and equipment</li> <li>handling of material</li> <li>use of fire-fighting equipment</li> <li>first aid equipment</li> </ul> </li> <li>hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>electrical and electronic failures</li> <li>direct faults in input sensors, output actuators, wiring harnesses or computer systems</li> <li>indirect faults caused by the influence of electrical and electronic external systems, which may or may not be faulty in their primary operations.</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>wiring and connector integrity</li> <li>operation and specification of input and output devices</li> <li>controlling electronic components and computers</li> <li>tests to voltage reducers and voltage inverters</li> <li>data interpretation and readings relating to direct, indirect and intermittent causes.</li> </ul>
<b><i>Testing equipment</i></b> may	<ul style="list-style-type: none"> <li>analogue and digital multimeters</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>lab oscilloscopes</li> <li>scan tools</li> <li>test lights and test LEDs</li> <li>pulse generators</li> <li>manufacturer and component supplier testing equipment.</li> </ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"> <li>analysing manufacturer and component supplier specifications, schematics and operational procedures relating to vehicle monitoring and protection systems</li> <li>six-step troubleshooting plan</li> <li>component replacement</li> <li>discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURETR5033 Develop and apply electronic systems modification

### Modification History

Release	Comment
Release 1	Replaces AURT576620A Develop and apply electronic systems modification  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to develop, apply and validate significant modifications to existing electronic systems in order to sustain, vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	This includes the preparation and application of specifications and processes complying with safety, legal and commercial obligations.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the modification requirement	<p>1.1.WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.2.Purpose and objectives of the modification are identified from an analysis of inputs and confirmed with the customer.</p> <p>1.3.Outline options for achieving the required purpose and objectives are identified, framed and presented to the customer prior to proceeding.</p> <p>1.4.Possible legal and safety impacts of the modification are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Develop and validate the modification specification	<p>2.1.Benchmark specifications for the existing electronic system are accessed and interpreted.</p> <p>2.2.Criteria to be used in the selection of the modification method and in the evaluation of the outcomes are identified and documented.</p> <p>2.3.Proposed modification method is selected following the identification, consideration and evaluation of the full range of available and relevant options.</p> <p>2.4.Selected option, including material choices and processes, is developed in detail and progressively validated against the established criteria.</p> <p>2.5.Modification specification is documented to industry and enterprise standards.</p>
3. Apply and test the modification specification	<p>3.1.Selected modification method and process is followed in accordance with the established specifications.</p> <p>3.2.Modification is completed using equipment, tooling and materials in accordance with accepted industry standards and practices.</p> <p>3.3.Tests and testing equipment are applied in accordance with regulatory requirements, manufacturer/component supplier specifications and modification specification.</p> <p>3.4.Test results and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes.</p> <p>3.5.Variations necessitated during the modification process or as a result of testing are incorporated into the modification specification.</p> <p>3.6.Information and detail related to the modification is documented and provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>

ELEMENT	PERFORMANCE CRITERIA
4. Clean up work area and maintain equipment	<p>4.1. Materials that can be reused is collected and stored.</p> <p>4.2. Testing equipment and support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>4.3. Waste and scrap is removed following workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand legal and technical information related to contemporary automotive electronic systems modifications.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the development and planning of modification processes, preparation and layout of the worksite and the obtaining of tooling, equipment, materials and testing equipment to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate specifications, calibrate and establish testing equipment and evaluate modification results against pre-established criteria.
- establish modification methods and processes which anticipate and allow for risks and avoid or minimise reworking and avoid wastage.
- use the full range of workplace technology related to electronic systems modification, including testing equipment, maintenance equipment, tooling, calculators and measuring devices and information management systems.

#### Required knowledge

- general knowledge of the types, functions, operations and limitations of the main automotive industry electronic systems.
- general knowledge of automotive digital computing systems.
- detailed knowledge of electrical theory and operation covering, laws, theorems, dc and ac voltage and current, resistance, power, capacitance, electrostatics, electromechanics, magnetism, inductance, reactance, time constants, resonance, filtering, discrete semi-conductor electronic components, colour codes, analogue electronics, analogue IC, binary, logic families, digital IC, memory types and functions, microprocessor principles, micro-controller principles, analogue to digital conversion, signal processing, output control and characteristics, automotive digital computers, programming, networked vehicles and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting modification specifications and outcomes.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Modify a significant electronic system or sub-system including:
  - external modification (not within the computer) to a digital computer management system enhancing the system performance
  - external modification (not within the computer) to a digital computer management system, utilising electronic circuit design, development, manufacture, trial, evaluation, improvement and commissioning, enhancing the system performance
  - internal modification (within the computer) to a digital computer management system, utilising electronic circuit design, reprogramming, development, manufacture, trial, evaluation, improvement, and commissioning enhancing the system performance.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to operational electronic systems requiring modification, testing equipment as stipulated in the Range Statement, technical information and a work environment.

#### Method of assessment

Assessment of this unit of competence is most likely to be project related and require portfolios or other forms of indirect evidence of

**EVIDENCE GUIDE**

	<p>process. Direct evidence will include certification of compliance of the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other projects.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Electrical modifications

Electronic modifications to be covered by this unit may include computer controlled systems where the process relates to three categories:

- Modification carried out external to the computer, utilising 'off the shelf' components and modification to wiring circuitry.

#### Example:

- Modification to an electronic engine management system, improving the performance of an ECU controlled engine cooling fan system necessitating changes to relay circuitry.
- Modification carried out external to the computer, utilising electronic circuit design, development, manufacture, trial, evaluation, improvement, and commissioning.

#### Example:

- Development of an electronic control unit to delay engine crank while sounding an alarm warning of impending start of hazardous equipment.
- Modification carried out internally in the computer, utilising electronic circuit design, reprogramming, development, manufacture, trial, evaluation, improvement, and commissioning.

#### Examples are:

- Rectification of an original internal computer design/operating deficiency
- Modification to an electronic engine management computer, to enhance the performance of an engine
- Modification to a computerised system, to disable a function no longer required by customer
- Inputs to the modification method and processes may be obtained from customer requirements, manufacturer/component supplier specifications, outcomes of diagnostic processes or from regulatory, licensing, intellectual property legislation, safety requirements and Australian Design Rules

#### Unit context

- WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances

<b>RANGE STATEMENT</b>	
	<p>and dangerous goods code and safe operating procedures.</p> <ul style="list-style-type: none"> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluation criteria</b>	Evaluation criteria, sometimes referred to as success factors, are to be established prior to a modification being undertaken and are to cover safety, functionality, survivability, maintainability life cycle cost and aesthetics.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.
<b>Equipment</b>	Equipment is to include that appropriate to the modification being carried out, including electronic work station, desoldering station, electronic variable power supply, simulated vehicle system test facility, multimeters, lab oscilloscopes, logic probe and data scanners, and it should include computer-based diagnostic systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to electronic systems modification.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging electronic technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Technical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Electrical and Electronic
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## AURETR5034 Develop and apply electrical systems modification

### Modification History

Release	Comment
Release 1	Replaces AURT576520A Develop and apply electrical systems modification  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to develop, apply and validate significant modifications to existing electrical systems in order to sustain, vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	This includes the preparation and application of specifications and processes complying with safety, legal and commercial obligations.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the modification requirement	<p>1.1.WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.2.Purpose and objectives of the modification are identified from an analysis of inputs and confirmed with the customer.</p> <p>1.3.Outline options for achieving the required purpose and objectives are identified, framed and presented to the customer prior to proceeding.</p> <p>1.4.Possible legal and safety impacts of the modification are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Develop and validate the modification specification	<p>2.1.Benchmark specifications for the existing electrical system are accessed and interpreted.</p> <p>2.2.Criteria to be used in the selection of the modification method and in the evaluation of the outcomes are identified and documented.</p> <p>2.3.Proposed modification method is selected following the identification, consideration and evaluation of the full range of available and relevant options.</p> <p>2.4.Selected option, including material choices and processes, is developed in detail and progressively validated against the established criteria.</p> <p>2.5.Modification specification is documented to industry and enterprise standards.</p>
3. Apply and test the modification specification	<p>3.1.Selected modification method and process is followed in accordance with the established specifications.</p> <p>3.2.Modification is completed using equipment, tooling and materials in accordance with accepted industry standards and practices.</p> <p>3.3.Tests and testing equipment are applied in accordance with regulatory requirements, manufacturer/component supplier specifications and modification specification.</p> <p>3.4.Test results and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes.</p> <p>3.5.Variations necessitated during the modification process or as a result of testing are incorporated into the modification specification.</p> <p>3.6.Information and detail related to the modification is documented and provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>

ELEMENT	PERFORMANCE CRITERIA
4. Clean up work area and maintain equipment	<p>4.1. Materials that can be reused is collected and stored.</p> <p>4.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>4.3. Waste and scrap is removed following workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p> <p>4.5. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand legal and technical information related to contemporary automotive electrical systems modifications.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the development and planning of modification processes, preparation and layout of the worksite and the obtaining of tooling, equipment, materials and testing equipment to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate specifications, calibrate and establish testing equipment and evaluate modification results against pre-established criteria.
- establish modification methods and processes which anticipate and allow for risks and avoid or minimise reworking and avoid wastage.
- use the full range of workplace technology related to electrical systems modification, including testing equipment, maintenance equipment, tooling, calculators and measuring devices and information management systems.

#### Required knowledge

- electrical theory covering voltage, current, resistance, power, magnetism and inductance including semi-conductors and electronic system applications.
- electrical theory covering the concepts and principles of electrical, electronic and pneumatic systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance and radio frequency.
- general knowledge of the types, functions, operation and limitations of the main automotive industry electrical systems.
- general knowledge of automotive digital computing systems.
- detailed knowledge of the types, functions, operation and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting modification specifications and outcomes.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Modify a significant electrical system or sub-system including:
  - the selection, development and documenting of success factors and evaluation criteria before undertaking the modification
  - the selection, development and validation of the modification methodology, processes and specification
  - the application of the modification specification, methodology and process
  - the documenting and reporting of the outcomes.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to operational electrical systems required modification, testing equipment as stipulated in the Range Statement, technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related and require portfolios or other forms of indirect evidence of process. Direct evidence will include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to

**EVIDENCE GUIDE**

	<p>be transferred to other projects.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Electrical modifications</b>	<p>Electrical modifications to be covered by this unit may include those to:</p> <ul style="list-style-type: none"> <li>• vary the performance of DC motors to meet changes in operational requirements</li> <li>• vary the performance of alternators to meet changes in operational requirements</li> <li>• change the electrical sequenced operating order of electric over hydraulic systems</li> <li>• convert vehicle from ground to insulated return.</li> </ul>
<b>Inputs to the modification method and processes</b>	<p>Inputs to the modification method and processes may be obtained from customer requirements, manufacturer/ component supplier specifications, outcomes of diagnostic processes or from regulatory, licensing, intellectual property legislation, safety requirements and Australian Design Rules.</p>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluation criteria</b>	<ul style="list-style-type: none"> <li>• Evaluation criteria, sometimes referred to as success factors, are to be established prior to a modification being undertaken and are to cover safety, functionality, survivability, maintainability, life cycle cost and aesthetics.</li> </ul>
<b>Isolation procedures</b>	<p>Equipment isolation procedures are to be to industry and enterprise standards.</p>
<b>Tests and testing equipment</b>	<p>Tests and testing equipment is to include that to the modification being carried out but it should include computer-based diagnostic systems.</p>
<b>Personal protective</b>	<p>Personal protective equipment is to include that prescribed under</p>

RANGE STATEMENT	
equipment	legislation, regulations and enterprise policies and practices.
Information and procedures	<ul style="list-style-type: none"><li>• Workplace procedures relating to the use of tooling and equipment.</li><li>• Workplace procedures relating to reporting and communication.</li><li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to electrical systems modification.</li><li>• Australian Design Rules.</li><li>• Vehicle industry regulations.</li><li>• Vehicle industry publications related to emerging transmission system technology and technology changes.</li></ul>

## Unit Sector(s)

Unit sector	Technical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Electrical and Electronic
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## AURETU2001 Install air conditioning systems

### Modification History

Release	Comment
Release 1	Replaces AURT222631A Install air conditioning systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to install air conditioning systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work involved includes installation of air conditioning systems fitted to light vehicles, plant and equipment, heavy vehicles or marine craft (low voltage).</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, installation and charging of the air conditioning systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to install air conditioning systems	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory/licensing requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as schematic diagrams, manufacturer/component supplier instructions, workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for air conditioning components are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with air conditioning and refrigerants are observed</p>
2. Install air conditioning systems	<p>2.1.Correct information is accessed and interpreted from manufacturer/component supplier specifications</p> <p>2.2.Fittings/materials are selected</p> <p>2.3.Air conditioning systems are installed using tooling and techniques</p> <p>2.4.Air conditioning system installation is completed without causing damage to any component or system</p> <p>2.5.Installation is tested prior to placing in service and results are documented in accordance with enterprise policies and procedures</p> <p>2.6.Installation is carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies</p>
3. Charge air conditioning system with refrigerant and lubricating oil	<p>3.1.Correct information is accessed and interpreted from manufacturer/component supplier specifications, industry codes of practice and legislation</p> <p>3.2.Charging of the air conditioning system is completed without causing damage to any component or system</p> <p>3.3.System is performance tested using approved methods and equipment</p> <p>3.4.Charging of the system is carried out according to manufacturer/component supplier specifications, industry regulations/guidelines, WHS legislation, legislation and enterprise policies/procedures</p>

ELEMENT	PERFORMANCE CRITERIA
4. Vehicle/equipment is prepared for deliver to customer	<ul style="list-style-type: none"><li>4.1.Installation schedule documentation is completed</li><li>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</li><li>4.3.Final inspection is made to ensure the system is functional, without leaks and work is to workplace expectations</li><li>4.4.Vehicle/equipment is cleaned to workplace expectations</li><li>4.5.Job card is processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the installation of air conditioning systems, including the use of specialist tooling, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS legislation and environmental regulations/ requirements, equipment, material and personal safety requirements
- identification of application, purpose and operating principles
- types and layout of service/repair manuals (hard copy and electronic)
- industry codes of practice
- air conditioning installation procedures
- nature and characteristics of refrigerant
- leakage test and performance procedures
- system electrical circuits
- damage that may occur to electronic control units by poor work practices

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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting installation in accordance with the workplace and manufacturer/component supplier requirements
- completing leak test and performing tests on the system
- accurately interpreting test results
- completing installation within workplace timeframes
- vehicle/equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the installation of air conditioning systems
- equipment, hand and power tooling appropriate to the installation of air conditioning systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Work requirements</b>	<p>Work involved includes installation of air conditioning systems fitted to light vehicles, plant and equipment, heavy vehicles or marine craft (low voltage):</p> <ul style="list-style-type: none"> <li>• refrigerant leak detecting</li> <li>• refrigerant gassing</li> <li>• component and system testing</li> <li>• performance testing</li> <li>• post-installation adjustments and checks</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</p>
<b>Environmental requirements</b>	<p>Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management</p>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and</p>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, refrigerant leak detecting equipment, refrigerant recovery and/or recycling equipment, thermometers, ram-air fan, refrigerant re-gassing equipment and air conditioning system kits
<b>Materials</b>	Materials may include spare parts, refrigerant, refrigerant oils and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the installation of air conditioning systems</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Air conditioning and HVAC
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## AURETU2002 Recover vehicle refrigerants

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to recover vehicle refrigerants. It includes identifying refrigerants and removing them into a designated recovery cylinder for correct disposal.</p> <p>Licensing, regulatory requirements apply to this unit. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the recovery of vehicle refrigerant from automotive air conditioning systems –including heating, ventilation, air conditioning and cooling (HVAC) systems – fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work is carried by a vehicle dismantler and automotive parts recycling contractor.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for refrigerant recovery	<p>1.1. <b>Workplace instructions and documentation</b> relevant to the task are sourced and work requirements confirmed</p> <p>1.2. <b>Workplace health and safety (WHS) and environmental requirements</b> and <b>critical precautions</b> are identified and applied</p> <p>1.3. Vehicle air conditioning and HVAC system, including system components and service ports, are identified for decommissioning</p> <p>1.4. <b>Recovery equipment</b> necessary for the work is assembled and checked for operation</p>
2. Operate recovery equipment	<p>2.1. <b>Refrigerant type</b> is <b>identified and documented</b></p> <p>2.2. Recovery equipment is connected to the vehicle</p> <p>2.3. Recovery cylinder is weighed to determine available capacity, and tare weight is set and recorded</p> <p>2.4. Recovery equipment is operated and monitored according to manufacturer instructions</p> <p>2.5. Recovery equipment, including hoses and recovery cylinder, is shut down and disconnected according to manufacturer instructions at completion of the recovery process</p>
3. Complete recovery operations	<p>3.1. Tare weight indicating the quantity of refrigerant recovered is recorded according to regulatory requirements</p> <p>3.2. Vehicle HVAC system is evacuated and decommissioned and the results are recorded according to workplace requirements</p> <p>3.3. Recovery equipment and recovery cylinder are stored according to regulatory and workplace requirements</p> <p>3.4. Tools are inspected, serviced and stored</p> <p>3.5. Filters are inspected, and cleaned or replaced according to manufacturer instructions</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge to expand own skills and knowledge of dangers associated with refrigerants
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
- numeracy skills to:
  - weigh recovery cylinder, refrigerant and the calculation of weights
- planning and organising skills to plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use tools relating to the recovery of vehicle refrigerants from systems, including:
  - specialist tools
  - measuring equipment
- technology skills to operate diagnostic and automotive refrigerant recovery equipment

#### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - codes of practice
  - personal protection needs
- application and purpose of recovery equipment procedures
- recovery procedures, including:
  - types and location of service ports
  - recovery equipment and recovery cylinder operation

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- awareness of environmental requirements associated with refrigerant recovery
- dangers associated with working with refrigerants and lubricants

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety precautions and requirements, in particular the dangers associated with handling refrigerants
- select recovery methods and decommissioning techniques appropriate to the circumstances
- safely operate automotive refrigerant recovery, tools and equipment
- recover and store refrigerants according to workplace licensing and equipment manufacturer requirements
- record relevant details in relation to workplace and licensing requirements
- understand environmental regulations and refrigerant waste disposal procedures.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- automotive vehicle, plant and equipment or a simulated automotive air conditioning system

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- refrigerant
- waste or recovery cylinder
- hose and vehicle couplings
- refrigerant scales
- recovery equipment, including vacuum pump
- refrigerant identifier
- appropriate hand tools
- licensing requirements and Australian standards.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions and documentation</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal instructions</li> <li>• written instructions</li> <li>• safe work procedures relating to the operation of air conditioning systems</li> <li>• decommissioning vehicle air conditioner procedures</li> <li>• operation of recovery equipment</li> <li>• regulatory compliance documentation</li> <li>• refrigerant recovery sheets</li> <li>• workplace auditing records</li> <li>• Australian standards.</li> </ul>
<b><i>Workplace health and safety and environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Critical precautions</i></b> may include:	<ul style="list-style-type: none"> <li>• dangers associated with working with refrigerants and lubricants, including: <ul style="list-style-type: none"> <li>• frostbite</li> <li>• carcinogenic properties</li> </ul> </li> <li>• care taken with some flammable refrigerants.</li> </ul>
<b><i>Recovery equipment</i></b> must include:	<ul style="list-style-type: none"> <li>• general hand tools</li> <li>• refrigerant hose and coupler</li> <li>• refrigerant recovery unit</li> <li>• refrigerant scales</li> <li>• designated recovery cylinder</li> <li>• refrigerant identifier.</li> </ul>
<b><i>Refrigerant type</i></b> may include:	<ul style="list-style-type: none"> <li>• chlorofluorocarbon (CFC)</li> <li>• hydrofluorocarbon (HCFC)</li> <li>• refrigerant oils – lubricants, mineral and synthetic.</li> </ul>
<b><i>Identified and documented</i></b>	<ul style="list-style-type: none"> <li>• quantity of refrigerant recovered</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

must include:

- cylinder gross weight
- records kept on ARCTick Form A3.

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Air Conditioning and HVAC

**Custom Content Section**

Not applicable.

## AURETU2003 Service air conditioning and HVAC systems

### Modification History

Release	Comment
Release 1	Replaces AURT222670A Service air conditioning systems Performance Criteria, Range Statement and Critical Aspects updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to service air conditioning systems □ including heating, ventilation, air conditioning and cooling (HVAC) systems □ that are fitted to a range of vehicles and equipment for passenger convenience and comfort.</p> <p>The unit involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to automotive air conditioners, including HVAC systems fitted to vehicles in light and heavy vehicle, mining, construction, agricultural, motorcycle and outdoor power equipment environments.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to service an air conditioning and HVAC system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Australian Refrigeration Council (ARC) code of practice is sourced and complied with</p> <p>1.5. <b>Servicing options</b> are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6. <b>Tools and equipment</b> are identified for effective servicing procedures</p> <p>1.7. <b>Critical precautions</b> in relation to working with air conditioning, refrigerant and refrigerant oils are observed</p>
2. Functionally test air conditioning and HVAC system and components and identify faults	<p>2.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>2.2. <b>Air conditioning and HVAC systems</b> are performance tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.3. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.4. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p> <p>2.5. Tests are carried out according to industry and WHS regulations and guidelines, and relevant industry codes of practice</p>
3. Service air conditioning and HVAC system	<p>3.1. Service of the system and components is carried out according to manufacturer and component supplier specifications, industry regulations and guidelines, WHS legislation, workplace policies and procedures, and relevant industry codes of practice</p> <p>3.2. Air conditioning system service is completed without causing damage to components or systems</p> <p>3.3. Regulations regarding topping up refrigerant are understood and followed</p>
4. Retest air conditioning and HVAC system	<p>4.1. System is retested to ensure correct and safe performance and operation</p> <p>4.2. <b>Post-service testing</b> is carried out and results are documented according to air conditioning service</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures and relevant industry codes of practice
5. Prepare vehicle and equipment for delivery to customer	<p>5.1. Final inspection is made to ensure vehicle protective guards and safety features are in place and work is to workplace expectations</p> <p>5.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>5.3. Workplace documentation is processed according to workplace procedures</p> <p>5.4. Appropriate <i>decal sticker</i> is placed in engine compartment</p>
6. Clean up work area and maintain equipment	<p>6.1. Material that can be reused is collected and stored in the appropriate designated area and according to workplace sustainability practices</p> <p>6.2. Waste and scrap are removed following workplace procedures and disposed of according to environmental regulations</p> <p>6.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>6.4. Faulty equipment is identified, tagged and isolated according to workplace procedures and WHS regulations</p> <p>6.5. Operator maintenance is completed according to manufacturer and component supplier specifications, site procedures and relevant industry codes of practice</p> <p>6.6. Tools and equipment are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when servicing various air conditioning and HVAC systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to:
  - work with diverse individuals and groups
  - apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to servicing air conditioning and HVAC systems, including:

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- specialist tools and equipment
- measuring equipment
- computerised technology
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - legislation and regulatory requirements
  - ARC code of practice
- principal types of vehicle air conditioning and HVAC systems, including:
  - piston, scroll and rotary vane compressors
  - electric compressors
  - variable displacement compressors
  - clutchless compressors
- application, purpose and operation of air conditioning and HVAC systems, including:
  - climate control
  - multi-zone systems
- techniques for reading and interpreting technical information, graphic symbols and diagrams
- diagnostic and testing procedures, including:
  - diagnostic procedures for air conditioning and HVAC systems, including:
    - accessing and interpreting diagnostic trouble codes
    - diagnostic flow charts
  - analysis of system operation using gauges, temperature probes, electrical test equipment, scan tools and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
    - vacuum and leaks
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements, in particular the dangers associated with handling refrigerants
- select methods and techniques appropriate to servicing an air conditioning system
- complete preparatory activity in a systematic manner
- identify application, purpose and operating principles of automotive air conditioning and HVAC systems
- conduct inspection, servicing and operational testing according to industry codes of practice and workplace, manufacturer and component supplier specifications
- ensure that the addition of refrigerant to an existing system charge to 'top up' the air conditioning system **is not** carried out
- performance test air conditioning systems
- accurately interpret performance test results
- complete servicing of air conditioning systems and associated components within workplace time frames
- present vehicle and equipment in a condition that complies with workplace requirements
- complete workplace and equipment documents to ARC code of practice requirements
- clean up work area and maintain equipment to workplace standards.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- ARC code of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with air conditioning and HVAC systems relevant to the qualification being sought
- material relevant to servicing air conditioning systems
- equipment appropriate for the testing of vehicle air conditioning and HVAC systems relevant to the qualification being sought, including:
  - manifold and gauge set
  - recovery unit
  - vacuum pump
  - electronic leak detector
  - nitrogen cylinder and regulator
  - digital vacuum gauge (vacrometer)
  - digital multimeter
  - electronic scales
  - oil injector
  - infra-red thermometer (pyrometer)
  - electronic temperature probe
  - valve core removing or replacement tool
  - psychrometer (humidity detector)
  - various refrigerant hoses and couplers
  - diagnostic scan tool
  - specifications and work instructions
  - service procedures for above equipment appropriate for the service and adjustment of vehicle air conditioning and HVAC systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace instructions*** may include:

- electronic or hard copy instructions
- verbal instructions
- written instructions
- safe work procedures relating to refrigerant recovery and replacement.

***Job requirements*** may include:

- testing and service methods, processes and equipment
- diagnosing faults that may be in addition to normal service procedures and may be detrimental to future performance of the air conditioning and HVAC system.

***Workplace health and safety requirements*** may include:

- material safety data sheets (MSDS)
- first aid kit
- personal protective clothing and equipment
- use of tools and equipment
- safe handling of material
- use of fire-fighting equipment
- workplace safety policies and procedures
- workplace first aid equipment
- hazard control, including control of hazardous materials and toxic substances
- water shower or equivalent.

***Procedures and information*** may include:

- verbal, written and graphical instructions
- signage
- work schedules, plans and specifications
- work bulletins and memos
- MSDS
- diagrams and sketches
- safe work procedures relating to servicing air conditioning and HVAC systems
- regulatory and legislative requirements relating to automotive industry
- Australian Design Rules
- engineer's design specifications and instructions
- workplace work specifications and requirements
- instructions issued by authorised workplace or external persons

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• ARC code of practice</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<i><b>Servicing options</b></i> may include:	<ul style="list-style-type: none"> <li>• fluid levels: <ul style="list-style-type: none"> <li>• refrigerant</li> <li>• lubricating oils</li> </ul> </li> <li>• filter serviceability: <ul style="list-style-type: none"> <li>• receiver dryer</li> <li>• cabin filter</li> </ul> </li> <li>• O-rings and seals</li> <li>• adjustments and operational testing</li> <li>• visual inspections and documentation.</li> </ul>
<i><b>Tools and equipment:</b></i>	<ul style="list-style-type: none"> <li>• are to include the following specialist tools that are mandatory under the ARC code of practice: <ul style="list-style-type: none"> <li>• manifold and gauge set</li> <li>• recovery unit</li> <li>• vacuum pump</li> <li>• electronic leak detector</li> <li>• electronic scales</li> </ul> </li> <li>• may include: <ul style="list-style-type: none"> <li>• normal hand tools</li> <li>• nitrogen cylinder and regulator</li> <li>• digital vacuum gauge (vacrometer)</li> <li>• oil injector</li> <li>• infra-red thermometer (pyrometer)</li> <li>• electronic temperature probe</li> <li>• valve core removing or replacement tool</li> <li>• psychrometer (humidity detector)</li> <li>• various refrigerant hoses and couplers</li> <li>• digital multimeter</li> <li>• diagnostic scan tool.</li> </ul> </li> </ul>
<i><b>Critical precautions</b></i> may include:	<ul style="list-style-type: none"> <li>• those relating to dangers associated with working with refrigerants and lubricants, including:</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• frostbite (refrigerant boiling point -36.7°C)</li> <li>• carcinogenic oil</li> <li>• care taken with some flammable refrigerants.</li> </ul>
<b><i>Air conditioning and HVAC systems</i></b> may include:	<ul style="list-style-type: none"> <li>• single zone and multi-zone, including:               <ul style="list-style-type: none"> <li>• climate control</li> <li>• electric compressors</li> </ul> </li> <li>• R12 systems</li> <li>• R134a systems</li> <li>• R1234yf systems</li> <li>• high and low pressure switches</li> <li>• pressure relief valves</li> <li>• temperature sensors</li> <li>• sunlight sensors</li> <li>• carbon dioxide sensors</li> <li>• zone temperature sensors.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes:               <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• system containing atmospheric air with moisture</li> <li>• electrical sensor malfunction</li> <li>• dislodged temperature sensor or transfer valve</li> <li>• faulty pressure relief valve</li> <li>• vacuum leak</li> <li>• air flow restriction or blockage</li> <li>• receiver drier blockage</li> <li>• evaporator fan not working</li> <li>• electrical fault</li> <li>• electrical system fault.</li> </ul>
<b><i>Post-service testing</i></b> may include:	<ul style="list-style-type: none"> <li>• validating the effectiveness of the service action, including the following checks:</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• ambient temperature</li> <li>• centre vent temperature</li> <li>• condenser and suction line temperature</li> <li>• manifold gauge pressure readings</li> <li>• refrigerant leaks</li> <li>• confirming that reported fault has now been rectified</li> <li>• confirming that no other faults are present as a result of the service action.</li> </ul>
<b><i>Information on decal sticker</i></b> must include:	<ul style="list-style-type: none"> <li>• name of the service organisation</li> <li>• quantity of refrigerant added</li> <li>• refrigerant and oil type</li> <li>• service date</li> <li>• technician's licence number</li> <li>• vehicle odometer reading.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical – Air Conditioning and HVAC
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## AURETU3004 Diagnose and repair air conditioning and HVAC systems

### Modification History

Release	Comment
Release 1	Replaces AURT322666A Repair/retrofit air conditioning systems Performance Criteria, Range Statement and Critical Aspects updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair air conditioning systems including heating, ventilation, air conditioning and cooling (HVAC) systems that are fitted to a range of vehicles and equipment for passenger convenience and comfort.</p> <p>The unit involves diagnosing deviations from correct operation, repairing vehicle air conditioning and HVAC system components and associated systems, and applying post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements; preparing for work; testing systems; identifying faults and causes and appropriate repair; retesting air conditioning and HVAC systems; and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work applies to automotive air conditioners, including HVAC systems fitted to vehicles in light and heavy vehicle, mining, construction, agricultural, motorcycle and outdoor power equipment environments.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair air conditioning and HVAC system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Australian Refrigeration Council (ARC) code of practice is sourced and complied with</p> <p>1.5. <b>Options for diagnosing faults</b> are identified and used, using appropriate tools and diagnostic techniques</p> <p>1.6. <b>Tools and equipment</b> are identified for effective diagnosis and repair methods</p> <p>1.7. <b>Critical precautions</b> in relation to working with air conditioning, refrigerant and refrigerant oils are observed</p>
2. Diagnose air conditioning and HVAC system	<p>2.1. <b>Air conditioning and HVAC systems</b> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <b>inappropriate testing procedures</b></p> <p>2.2. <b>Faults</b> are identified from test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair air conditioning and HVAC system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools and recognised techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p>
4. Retest air conditioning and HVAC system	<p>4.1. Retests are carried out to ensure correct and safe air conditioning and HVAC system performance operation</p> <p>4.2. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
5. Prepare vehicle and equipment for delivery to customer after repair is completed	<p>5.1. Final inspection is made to ensure work is to workplace expectations</p> <p>5.2. Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>5.3. Workplace documentation is processed according to</p>

ELEMENT	PERFORMANCE CRITERIA
	workplace procedures 5.4.Appropriate <i>decal sticker</i> is placed in engine compartment
6. Clean up work area and finalise work processes	6.1.Material that can be reused is collected and stored in the appropriate designated area and according to workplace sustainability practices 6.2.Waste and scrap are removed following workplace procedures and disposed of according to environmental regulations 6.3.Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures 6.4.Faulty equipment is identified, tagged and isolated according to workplace procedures and WHS regulations 6.5.Operator maintenance is completed according to manufacturer and component supplier specifications, site procedures and relevant industry codes of practice 6.6.Tools and equipment are maintained according to workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when diagnosing and repairing various air conditioning and HVAC systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - determine the underlying causes of faults
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to repairing air conditioning and HVAC systems, including:
  - specialist tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- computerised technology
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - legislation relating to automotive air conditioning and HVAC systems
  - ARC code of practice
- principles of operation of automotive air conditioning and HVAC systems, including:
  - piston, scroll and rotary vane compressors
  - electric compressors
  - variable displacement compressors
  - clutchless compressors
- application, purpose and operation of air conditioning and HVAC systems, including:
  - climate control
  - multi-zone systems
- techniques for reading and interpreting technical information, including:
  - refrigerant saturation temperatures in relation to ambient temperatures and changing levels of humidity
  - graphic symbols and diagrams
- diagnostic and testing procedures, including:
  - use of manifold gauges and surface probe thermocouples for complete system analysis
  - diagnostic procedures for air conditioning and HVAC systems, including:
    - accessing and interpreting diagnostic trouble codes (DTC)
    - diagnostic flow charts
  - analysis of system operation using gauges, temperature probes, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
    - vacuum and leaks
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements, in particular the dangers associated with handling refrigerants
- select methods and techniques appropriate to diagnosing and repairing an air conditioning system
- complete preparatory activity in a systematic manner
- diagnose and repair a range of vehicle air conditioning and HVAC systems, including:
  - climate control
  - single and multi-zone
  - electric compressors
- apply safe operation of automotive refrigerant tools and equipment
- record relevant details in relation to workplace and licensing requirements of the ARC code of practice
- demonstrate understanding of the environmental regulations and refrigerant waste disposal procedures
- conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements
- present vehicle and equipment in a condition that complies with workplace requirements
- complete workplace and equipment documents to ARC code of practice requirements
- clean up work area and maintain equipment to workplace standards.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- ARC code of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with air conditioning and HVAC faults relevant to the qualification being sought
- equipment appropriate for the diagnosing and repairing a range of vehicle air conditioning and HVAC systems relevant to the qualification being sought, including:
  - manifold and gauge set
  - recovery unit
  - vacuum pump
  - electronic leak detector
  - nitrogen cylinder and regulator
  - digital vacuum gauge (vacrometer)
  - digital multimeter
  - electronic scales
  - oil injector
  - infra-red thermometer (pyrometer)
  - electronic temperature probe
  - valve core removing/replacement tool
  - psychrometer (humidity detector)
  - various refrigerant hoses and couplers
  - diagnostic scan tool
- specifications and workplace instructions
- service procedures for above equipment appropriate for the diagnosis, repair, replacement and adjustment of vehicle air conditioning and HVAC systems.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic or hard copy instructions</li> <li>• verbal instructions</li> <li>• written instructions</li> <li>• safe work procedures relating to refrigerant recovery and replacement.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• first aid kit</li> <li>• personal protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• water shower or equivalent</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• MSDS</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to the diagnosis and repair of air conditioning and HVAC systems</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• ARC code of practice</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Options for diagnosing faults</i></b> may include:	<ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• component inspection and evaluation</li> <li>• use and application of air conditioning diagnostic tools.</li> </ul>
<b><i>Tools and equipment:</i></b>	<ul style="list-style-type: none"> <li>• are to include the following specialist tools, which are mandatory under the ARC code of practice:             <ul style="list-style-type: none"> <li>• manifold and gauge set</li> <li>• recovery unit</li> <li>• vacuum pump</li> <li>• electronic leak detector</li> <li>• electronic scales</li> </ul> </li> <li>• may include:             <ul style="list-style-type: none"> <li>• normal hand tools</li> <li>• nitrogen cylinder and regulator</li> <li>• digital vacuum gauge (vacrometer)</li> <li>• oil injector</li> <li>• infra-red thermometer (pyrometer)</li> <li>• electronic temperature probe</li> <li>• valve core removing/replacement tool</li> <li>• psychrometer (humidity detector)</li> <li>• various refrigerant hoses and couplers</li> <li>• digital multimeter</li> <li>• diagnostic scan tool.</li> </ul> </li> </ul>
<b><i>Critical precautions</i></b> may include:	<ul style="list-style-type: none"> <li>• dangers associated with working with refrigerants and lubricants, including:             <ul style="list-style-type: none"> <li>• frostbite (refrigerant boiling point -36.7°C)</li> <li>• carcinogenic oil</li> <li>• care taken with some flammable refrigerants.</li> </ul> </li> </ul>
<b><i>Air conditioning and HVAC systems</i></b> may include:	<ul style="list-style-type: none"> <li>• single zone and multi-zone, including:             <ul style="list-style-type: none"> <li>• climate control</li> <li>• electric compressors</li> </ul> </li> <li>• R12 systems</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• R134a systems</li> <li>• R1234yf systems</li> <li>• high and low pressure switches</li> <li>• pressure relief valve</li> <li>• temperature sensors</li> <li>• sunlight sensors</li> <li>• carbon dioxide sensors</li> <li>• zone temperature sensors.</li> </ul>
<b><i>Inappropriate testing procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> <li>• back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>• probing terminal and connectors with inappropriate test probes</li> <li>• pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• system containing atmospheric air with moisture</li> <li>• electrical sensor malfunction</li> <li>• dislodged temperature sensor or transfer valve</li> <li>• faulty pressure relief valve</li> <li>• vacuum leak</li> <li>• air flow restriction or blockage</li> <li>• receiver drier blockage</li> <li>• evaporator fan not working</li> <li>• electrical fault</li> <li>• electrical system fault.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• validating effectiveness of the repair action, including the following checks: <ul style="list-style-type: none"> <li>• ambient temperature</li> <li>• centre vent temperature</li> <li>• condenser and suction line temperature</li> <li>• manifold gauge pressure readings</li> </ul> </li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• refrigerant leaks</li><li>• confirming that reported fault has been rectified</li><li>• confirming that no other faults are present as a result of the repair action.</li></ul>
<b><i>Information on decal sticker</i></b> must include:	<ul style="list-style-type: none"><li>• name of the service organisation</li><li>• quantity of refrigerant added</li><li>• refrigerant and oil type</li><li>• service date</li><li>• technician's licence number</li><li>• vehicle odometer reading.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Air Conditioning and HVAC

**Co-requisite units**

Not applicable.

**Competency field**

## AURETU3005 Retrofit and modify air conditioning and HVAC systems

### Modification History

Release	Comment
Release 1	Replaces AURT322666A Repair/retrofit air conditioning systems Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to retrofit and modify automotive air conditioning systems – including heating, ventilation, air conditioning and cooling (HVAC) systems – that are fitted to a range of vehicles and equipment for passenger convenience and comfort.</p> <p>The unit involves diagnosing deviations from correct operation, the retrofit and modification of vehicle air conditioning and HVAC system components and associated systems, and applying post-modification testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, de-gassing and re-gassing systems, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work applies to automotive air conditioners, including HVAC systems fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle and outdoor power equipment environments.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to retrofit air conditioning and HVAC system	<p>1.1. Nature and <i>scope of work</i> requirements are identified and confirmed</p> <p>1.2. <i>Workplace health and safety (WHS) requirements</i> are observed throughout the work</p> <p>1.3. <i>Procedures and information</i> are sourced and interpreted</p> <p>1.4. Australian Refrigeration Council (ARC) code of practice is sourced and complied with</p> <p>1.5. <i>Retrofit options</i> are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6. Technical and calibration requirements for retrofit are sourced and support equipment is identified and prepared</p> <p>1.7. <i>Tools and equipment</i> are identified for effective retrofit and modification methods</p> <p>1.8. <i>Critical precautions</i> in relation to working with air conditioning, refrigerant and refrigerant oils are observed</p>
2. De-gas and re-gas air conditioning and HVAC system	<p>2.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>2.2. System is de-gassed using approved recovery unit and appropriate refrigerant recovery cylinder for individual refrigerant type</p> <p>2.3. Oil recovered is measured for replacement purposes</p> <p>2.4. System is evacuated according to manufacturer and component supplier specifications and industry codes of practice, including state and territory legislation with reference to ozone depleting substances</p> <p>2.5. System is pressure tested for leaks prior to being re-gassed and performance tested using approved methods and equipment</p> <p>2.6. Recovery and charging of air conditioning system are completed without causing damage to components or systems and in line with requirements for ozone depleting substances, industry regulations and guidelines, WHS legislation, and relevant industry codes of practice</p>
3. Retrofit air conditioning and HVAC system	<p>3.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>3.2. Air conditioning retrofit procedures are determined after performance testing</p> <p>3.3. Retrofit of the system and components is carried out according to manufacturer and component supplier specifications</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4.Modifications are carried out without additional pressures associated with the performance of the system or any loss to system integrity</p> <p>3.5.Retrofit to air conditioning system is completed without causing damage to components or systems and according to industry regulations and guidelines, WHS legislation, and relevant industry codes of practice</p>
4. Performance test air conditioning and HVAC system	<p>4.1.System is performance tested prior to placing into service and results are documented according to workplace policies and procedures</p> <p>4.2.Service schedule documentation is completed</p> <p>4.3.Final inspection is made to ensure protective guards and safety features are in place</p>
5. Retest air conditioning and HVAC systems	<p>5.1.Retests are carried out to ensure correct and safe system performance operation</p> <p>5.2.<b>Post-retrofit testing</b> is carried out according to workplace procedures and relevant legislation</p>
6. Prepare vehicle and equipment for delivery to customer	<p>6.1.Final inspection is made to ensure work is to workplace expectations</p> <p>6.2.Vehicle is cleaned to workplace expectations and presented ready for use</p> <p>6.3.Workplace documentation is processed according to workplace procedures</p> <p>6.4.Appropriate <b>decal sticker</b> is placed in engine compartment</p>
7. Clean up work area and maintain equipment	<p>7.1.Material that can be reused is collected and stored in the appropriate designated area and</p> <p>7.2.Waste and scrap are removed following workplace procedures and disposed of according to environmental regulations</p> <p>7.3.Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>7.4.Faulty equipment is identified, tagged and isolated according to workplace procedures and WHS regulations</p> <p>7.5.Operator maintenance is completed according to manufacturer and component supplier specifications, site procedures and ARC code of practice</p> <p>7.6.Tools and equipment are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
  - apply learning when retrofitting and modifying various air conditioning and HVAC systems
  - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to:
  - test, measure and analyse test equipment results compared to desired system performance
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to the retrofit and modification of air conditioning and HVAC systems, including:
  - specialist tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- computerised technology
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - legislation
  - ARC code of practice
- principles of operation of automotive air conditioning and HVAC systems, including:
  - piston, scroll and rotary vane compressors
  - electric compressors
  - variable displacement compressors
  - clutchless compressors
- application, purpose and operation of air conditioning and HVAC systems, including:
  - climate control
  - multi-zone systems
- technical information relating to air conditioning and HVAC systems, including:
  - refrigerant saturation temperatures in relation to ambient temperatures and changing levels of humidity
  - graphic symbols and diagrams
- diagnostic and testing procedures, including:
  - use of manifold gauges and surface probe thermocouples for complete system analysis
  - diagnostic procedures for air conditioning and HVAC systems, including:
    - accessing and interpreting diagnostic trouble codes
    - diagnostic flow charts
  - analysis of system operation using gauges, temperature probes, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
  - visual, aural and functional assessments, including:
    - component damage and wear
    - component corrosion
    - vacuum and leaks
- repair procedures, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements, in particular the dangers associated with handling refrigerants
- select methods and techniques appropriate to the retrofit and modification of an air conditioning system
- conduct performance testing to establish viability of retrofit and modification
- complete preparatory activity in a systematic manner
- apply full retrofit and modify sequence in line with scope of work
- accurately interpret air conditioning performance test results
- conduct refrigerant recovery and evacuation of refrigerant operations according to industry codes of practice and legislation, and charge the system with the appropriate refrigerant and oil type
- complete a retrofit and modification of air conditioning system and associated components within workplace time frames
- present vehicle and equipment in a condition that complies with workplace requirements
- complete workplace and equipment documents to ARC code of practice requirements
- clean up work area and maintain equipment to workplace standards.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice
- ARC code of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- light and heavy vehicles with air conditioning and HVAC systems relevant to the qualification being sought
- material relevant to perform a retrofit and modification of air conditioning systems
- equipment appropriate for the retrofit or modification of light and heavy vehicle air conditioning and HVAC systems, including:
  - manifold and gauge set
  - recovery unit
  - vacuum pump
  - electronic leak detector
  - nitrogen cylinder and regulator
  - digital vacuum gauge (vacrometer)
  - digital multimeter
  - electronic scales
  - oil injector
  - infra-red thermometer (pyrometer)
  - electronic temperature probe
  - valve core removing/replacement tool
  - psychrometer (humidity detector)
  - various refrigerant hoses and couplers
  - diagnostic scan tool
- specifications and work instructions
- service procedures for above equipment appropriate for the retrofit and modification of vehicle air conditioning and HVAC

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Scope of work</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• type of system fitted</li> <li>• refrigerant type</li> <li>• oil type</li> <li>• system variables, including:             <ul style="list-style-type: none"> <li>• refrigerant leak detecting</li> <li>• refrigerant recovery and charging</li> <li>• system evacuation</li> <li>• mechanical removal and replacement of components</li> <li>• system and component testing</li> <li>• performance testing.</li> </ul> </li> </ul>
<p><b><i>Workplace health and safety requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• first aid kit</li> <li>• personal protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• water shower or equivalent</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• dangers associated with handling refrigerants and oils.</li> </ul>
<p><b><i>Procedures and information</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• MSDS</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to the retrofit and modification to air conditioning and HVAC systems</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• ARC code of practice</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Retrofit options</i></b> may include:	<ul style="list-style-type: none"> <li>• change of refrigerant gas from R12 to R134a: <ul style="list-style-type: none"> <li>• receiver dryer filter replacement</li> <li>• change of system fittings for gauge fitment</li> </ul> </li> <li>• change of refrigerant gas from R134a to R1234yf: <ul style="list-style-type: none"> <li>• change of system fittings for gauge fitment.</li> </ul> </li> </ul>
<b><i>Tools and equipment:</i></b>	<ul style="list-style-type: none"> <li>• are to include the following specialist tools, which are mandatory under the ARC code of practice: <ul style="list-style-type: none"> <li>• manifold and gauge set</li> <li>• recovery unit</li> <li>• vacuum pump</li> <li>• electronic leak detector</li> <li>• electronic scales</li> </ul> </li> <li>• may include: <ul style="list-style-type: none"> <li>• normal hand tools</li> <li>• nitrogen cylinder and regulator</li> <li>• digital vacuum gauge (vacrometer)</li> <li>• oil injector</li> <li>• infra-red thermometer (pyrometer)</li> <li>• electronic temperature probe</li> <li>• valve core removing/replacement tool</li> <li>• psychrometer (humidity detector)</li> <li>• various refrigerant hoses and couplers</li> <li>• digital multimeter</li> <li>• diagnostic scan tool.</li> </ul> </li> </ul>
<b><i>Critical precautions</i></b> may include:	<ul style="list-style-type: none"> <li>• dangers associated when working with refrigerants and lubricants, including: <ul style="list-style-type: none"> <li>• frostbite (refrigerant boiling point -36.7°C)</li> </ul> </li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• carcinogenic oil</li> <li>• care taken with some flammable refrigerants.</li> </ul>
<b><i>Post-retrofit testing</i></b> may include:	<ul style="list-style-type: none"> <li>• validating the effectiveness of the retrofit and modification action, including the following checks: <ul style="list-style-type: none"> <li>• ambient temperature</li> <li>• centre vent temperature</li> <li>• condenser and suction line temperature</li> <li>• manifold gauge pressure readings</li> <li>• refrigerant leaks</li> </ul> </li> <li>• confirming that reported faults have been rectified</li> <li>• confirming that no other faults are present as a result of the retrofit and modification action.</li> </ul>
Information on <b><i>decal sticker</i></b> must include:	<ul style="list-style-type: none"> <li>• name of the service organisation</li> <li>• quantity of refrigerant added</li> <li>• refrigerant and oil type</li> <li>• service date</li> <li>• technician's licence number</li> <li>• vehicle odometer reading.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical – Air Conditioning and HVAC
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## AURETU4006 Diagnose complex faults in air conditioning and HVAC systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to diagnose complex faults in vehicle air conditioning systems, including heating, ventilation, air conditioning and cooling (HVAC) systems, in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies and includes system fault and failure diagnosis of faults in HVAC systems fitted to light vehicles, heavy commercial vehicles, and vehicles in the mining, construction and agricultural environments.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm work requirement	<ul style="list-style-type: none"><li>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</li><li>1.2. Specifications for correctly functioning vehicle HVAC systems are accessed and interpreted</li><li>1.3. <b>Workplace health and safety (WHS) requirements</b>, equipment and system isolation requirements and personal protection needs are observed and applied throughout the work</li><li>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in vehicle HVAC systems are identified and confirmed from direct or indirect evidence</li><li>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</li></ul>
2. Prepare to perform diagnosis	<ul style="list-style-type: none"><li>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</li><li>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</li><li>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</li><li>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</li><li>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</li></ul>
3. Apply complex diagnostic process	<ul style="list-style-type: none"><li>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</li><li>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</li><li>3.3. Findings are verified, if necessary, by using reliable alternative or optional processes</li><li>3.4. Conclusions are drawn from findings and documented according to workplace requirements</li><li>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to vehicle HVAC systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of vehicle HVAC systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of HVAC systems
- types, functions, operations and limitations of HVAC systems
- diagnostic theory, including concept, design and planning
- electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, magnetics, inductance and discrete electronic components
- types, functions, operations and limitations of diagnostic testing equipment related to vehicle HVAC systems
- testing procedures of vehicle HVAC systems
- methods and processes for documenting and reporting diagnostic findings and recommendations

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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different vehicle HVAC systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in vehicle HVAC systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with real or simulated HVAC system faults
- tools and equipment appropriate for the diagnosis of complex faults in vehicle HVAC systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Workplace health and safety (WHS) requirements:</i></b></p>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> <li>• safety management systems, including equipment and system isolation requirements</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances</li> </ul>
<p><b><i>Faults</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• indirect faults caused by the influence of external electrical and electronic systems, which may or may not be faulty in their primary operations</li> <li>• direct faults in input sensors, output actuators, wiring harnesses, computer systems, and calibration or adjustment specifications</li> <li>• component specifications, component assembly, component damage and system modifications</li> <li>• indirect engine mechanical faults.</li> </ul>
<p><b><i>Tests</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• wiring and connector integrity</li> <li>• operation and specification of input and output devices</li> <li>• controlling electronic components and computers</li> <li>• data interpretation and readings relating to direct, indirect and intermittent causes</li> <li>• mechanical systems testing</li> <li>• road tests</li> <li>• engine electrical component tests.</li> </ul>
<p><b><i>Testing equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• pressure gauges</li> <li>• charge stations</li> <li>• reclaim units</li> <li>• recycling units</li> <li>• leak detectors</li> <li>• thermometers</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• flushing equipment</li><li>• scan tools</li><li>• test lights and test LEDs</li><li>• analogue and digital multimeters</li><li>• lab oscilloscopes.</li></ul>
<i><b>Diagnostic processes</b></i> may include:	<ul style="list-style-type: none"><li>• analysing manufacturer and component supplier specifications, schematics and operational procedures relating to HVAC systems</li><li>• component substitution</li><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Electrical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical – Air conditioning and HVAC
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## AURETU4007 Overhaul air conditioning system components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT322645A Overhaul air conditioning system components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to overhaul air conditioning system components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of the work requirement, preparation for work, testing and analysis of systems, dismantling, reassembling and retesting of air conditioning system components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes air conditioning components fitted to light vehicles, heavy commercial vehicles and/or plant and equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul air conditioning components	1.1. Nature and scope of the work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory/licensing requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals, specifications and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for overhauling air conditioning components are sourced and support equipment is identified and prepared 1.6. Hazards in relation to working with refrigerants are observed 1.7. Awareness of proper decanting and disposal of ozone depleting substances are recognised
2. Test air conditioning systems and analyse results	2.1. Methods for the conduct of the system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is processed in accordance with workplace procedures
3. Overhaul air conditioning system components	3.1. Information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Air conditioning system components are dismantled, reassembled and tested to manufacturer/component supplier specifications 3.3. Worn, damaged, deteriorated or faulty components are identified and replaced/repared 3.4. Air conditioning system overhaul is completed without causing damage to any component or system 3.5. System components are tested prior to placing into service and results are documented in accordance with enterprise policies and procedures 3.6. Air conditioning system components are overhauled according to industry regulations/guidelines, WHS

ELEMENT	PERFORMANCE CRITERIA
	legislation, legislation and enterprise procedures/policies
4. Prepare air conditioning components and/or system for service or storage	<ul style="list-style-type: none"><li>4.1. Work schedule documentation is completed</li><li>4.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</li><li>4.3. Final inspection is made to ensure work is to workplace expectations</li><li>4.4. Air conditioning system/components are cleaned and/or stored to workplace expectations</li><li>4.5. Job card is processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the overhaul of air conditioning systems, including the use of measuring equipment, computerised technology, specialist tooling and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- identification of the application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- identification of wear evaluation methods
- types and layout of service/repair manuals (hard copy and electronic)
- damage that may occur to electronic control units by the use of poor work practices
- measuring and testing procedures
- nature and characteristics of refrigerant
- component repair/overhauling procedures
- enterprise quality procedures
- work organisation and planning procedures



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of the application, purpose and operation
- application of the full overhaul sequence as per the Range Statement relative to the qualification being sought
- interpreting the test results
- completing overhaul of the system and associated components within workplace timeframes
- presentation of vehicle to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to overhauling air conditioning system components
- equipment, hand and power tooling appropriate to overhauling air conditioning system components
- activities covering the mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

	<p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>Fault finding</b>	Fault finding includes: <ul style="list-style-type: none"> <li>• fault finding with aural, visual and functional assessments (including damage, corrosion, wear, refrigeration leakage)</li> <li>• reading and interpreting manufacturer/component supplier information</li> </ul>
<b>Specific requirements</b>	Specific requirements: <ul style="list-style-type: none"> <li>• compressors</li> <li>• evaporators</li> <li>• condensers</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site

<b>RANGE STATEMENT</b>	
	evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, cleaning equipment, pressure testing equipment, sealing equipment, leak detection equipment, thermometer, evacuation equipment, heating/soldering equipment, refrigerant recovery and/or recycling equipment, and refrigerant regassing equipment
<b>Materials</b>	Materials may include refrigeration oils, refrigerants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to overhauling air conditioning system components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Technical
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Air Conditioning and HVAC
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## AURETX5001 Analyse and evaluate electrical and electronic faults in transmission and driveline systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT575393A Analyse and evaluate electrical and electronic faults in transmission/driveline systems</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic faults in transmission/driveline systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning electrical and electronic transmission/driveline systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Electrical and electronic transmission/driveline system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary electrical and electronic transmission/driveline systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems input.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the types, functions and operations of transmission/driveline systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within light vehicle, mobile plant, heavy vehicle, transmission/driveline systems.
- detailed knowledge of electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetism, inductance, discrete electronic components, logic families and radio frequency.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.
- general knowledge of personal computer operation.



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three different transmission/driveline systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different transmission/driveline systems.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> <li>• Basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.</li> </ul>
<p><b>Context of, and specific resources for assessment</b></p>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, operational electrical and electronic transmission/driveline systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<p><b>Method of assessment</b></p>	<p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or</p>

## EVIDENCE GUIDE

	<p>authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Failure analysis and evaluation process

The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.

#### Transmission/driveline systems

Transmission/driveline systems to be covered by this unit include clutches, torque converters, mechanical and automatic transmissions, drive and power take-off shafts, and differentials. Coverage is to include mechatronic modules and multi-class bus systems.

#### Transmission/driveline systems electrical and electronic failures

Transmission/driveline systems electrical and electronic failures covered by this unit are to include direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.

#### Transmission/driveline systems failures

Transmission/driveline systems failures covered by this unit are to include indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations.

#### Unit context

- WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code, and safe operating procedures.
- Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.
- Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.

#### Evaluative criteria

Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.

#### Isolation procedures

Equipment isolation procedures are to be to industry and enterprise

<b>RANGE STATEMENT</b>	
	standards and are to include the disarming of supplementary restraint systems (SRS) by manufacturer/ component supplier specifications.
<b>Testing equipment</b>	Testing equipment is to include multimeters, lab oscilloscopes, data scanners, test lights, test LEDs, and may include pulse generators and manufacturer/component supplier testing equipment.
<b>Tests</b>	Tests to be conducted are to include wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to transmission/driveline systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging transmission/driveline system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Technical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Transmission
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## AURHTA1001 Carry out heavy vehicle pre-repair operations

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to prepare and clean heavy vehicles and major components by mechanical or chemical means and prepare equipment or components in readiness for either storage or repair.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, cleaning of components, the removal of components, tagging and storage of components and completion of work finalisation processes, including clean-up and documentation.</p> <p>No licencing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	Work applies to heavy vehicles in the road transport, mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake pre-repair operations	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Method options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate tools and equipment are selected and prepared</p> <p>1.6. Warnings relating to working with <b>cleaning materials</b> are observed</p>
2. Clean equipment or components prior to repair or storage	<p>2.1. Cleaning materials and <b>equipment</b> are used according to workplace procedures and manufacturer and component supplier specifications</p> <p>2.2. Components are cleaned to workplace expectations and without causing damage to components or systems</p> <p>2.3. Used cleaning agents and waste materials are safely disposed of according to industry regulations and guidelines and workplace requirements</p> <p>2.4. Cleaning activities are carried out according to industry regulations and guidelines, workplace health and safety and <b>environmental requirements</b></p>
3. Clean up work area and finalise work processes	<p>3.1. Components are prepared for further repair procedures or treated with rust prevention material when being stored</p> <p>3.2. Components are stored according to workplace procedures, to prevent injury to self and others or damage to components</p> <p>3.3. Tools and equipment are checked and stored according to workplace expectations</p> <p>3.4. Pre-repair operation documentation is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow oral and written instructions
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during pre-repair operations
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
- technical skills to use workplace tools and equipment relating to the pre-repair operations of heavy vehicles

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with chemical cleaning agents and cleaning equipment
- cleaning procedures
- environmental considerations related to chemical and cleaning agent use
- storage procedures of cleaned heavy vehicle components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- conduct cleaning and storage operations according to workplace requirements
- complete workplace documentation according to workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles and heavy vehicle components requiring pre-repair operations
- equipment, cleaning agents and material relevant to carrying out pre-repair operations
- hand tools appropriate to carrying out pre-repair operations

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- specifications and work instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Workplace instructions** may include:

- computer-generated instructions
- verbal instructions
- written instructions.

**Workplace health and safety (WHS) requirements:**

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

**Procedures and information** may include:

- safe work **procedures** relating to heavy vehicle pre-repair operations
- verbal, written and graphical instructions
- signage
- work schedules, plans and specifications
- work bulletins or memos
- material safety data sheets (MSDS)
- diagrams or sketches
- regulatory and legislative requirements relating to the automotive industry
- Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards
- heavy vehicle repair manuals.

**Method options** may include:

- steam cleaning
- high-pressure washing
- manual washing
- the use of protective coverings

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• dismantling.</li> </ul>
<i><b>Cleaning materials</b></i> may include:	<ul style="list-style-type: none"> <li>• cleaning agents</li> <li>• sprays (dewaxing, detergents, degreasers, special purpose agents)</li> <li>• rust prevention material.</li> </ul>
<i><b>Equipment</b></i> may include:	<ul style="list-style-type: none"> <li>• hand tools and equipment</li> <li>• personal and vehicle protection</li> <li>• storage tubs and racks</li> <li>• special equipment (pressure washers, steam cleaners, spray equipment)</li> <li>• power tools</li> <li>• jacks and stands</li> <li>• lifting equipment.</li> </ul>
<i><b>Environmental requirements</b></i> may include:	<ul style="list-style-type: none"> <li>• waste management</li> <li>• chemical and cleaning agent management</li> <li>• control of noise and fumes</li> <li>• clean-up management.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical - Heavy Vehicle
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURHTA2003 Remove and replace heavy commercial vehicle ancillary components and accessories

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to remove, replace and make adjustments to heavy commercial vehicle ancillary components and accessories.</p> <p>It involves the ability to understand equipment specifications and to use tools and equipment to remove, fit and adjust heavy commercial vehicle ancillary components and accessories to required standards.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the removal, replacement, fitting and adjustment of ancillary components, equipment and accessories in heavy commercial vehicle retail, service and repair environments.</p> <p>Work applies to all types of heavy commercial vehicles and road transport vehicles.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Work requirements</b> are identified and confirmed</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> and other appropriate precautions are identified and taken</p> <p>1.3. Procedures and information, such as workshop manuals, are sourced</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. <b>Tools and equipment</b> required for the task are selected and prepared</p>
2. Remove and inspect ancillary components or accessories	<p>2.1. Ancillary components or accessories for removal are identified</p> <p>2.2. Method for removal is implemented according to manufacturer and component supplier specifications</p> <p>2.3. <b>Ancillary components and accessories</b> are removed without damage</p> <p>2.4. Ancillary components and accessories are inspected</p> <p>2.5. <b>Workplace documentation</b> is compiled according to workplace procedures</p>
3. Fit, test and adjust ancillary components or accessories	<p>3.1. Ancillary components and accessories for fitting are identified</p> <p>3.2. Fitting is implemented according to manufacturer and component supplier specifications</p> <p>3.3. Ancillary components or accessories are adjusted according to manufacturer and component supplier specifications</p> <p>3.4. Post-fitting testing is performed to ensure integrity of work carried out</p> <p>3.5. Further adjustments are made where necessary on conclusion of testing</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and motorcycle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - communicate effectively regarding work requirements with supervisor or other workers
  - report work outcomes and problems
- literacy skills to:
  - read information relating to work orders, including common industry terminology, and accessory and component assembly plans and fitting instructions
  - read to the level required to understand work plans and workplace safety procedures
  - prepare written reports
- numeracy skills to correctly interpret metric and imperial systems of measurement
- planning and organising skills to:
  - identify risk factors to minimise risk
  - contribute to activities that implement and follow standard workplace procedures
- problem-solving skills to:
  - identify technical and procedural problems
  - refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - locate and identify appropriate tools and equipment
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to support workplace activities and tasks
- technical skills to:
  - select tools and equipment appropriate to the task
  - use tools and equipment to remove and replace ancillary components and accessories of heavy commercial vehicles
- technology skills to use tools and equipment to assist with work practices

#### Required knowledge

- WHS requirements, including personal safety requirements, relevant to working with heavy commercial vehicles
- types, function, application and operation of tools and equipment used for removing and replacing heavy commercial vehicle ancillary components and accessories
- removal and replacement procedures of heavy commercial vehicle ancillary components and accessories
- testing procedures and adjustment methods relating to heavy commercial vehicle ancillary components and accessories
- workplace documentation policies and procedures



## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select removal, replacement, inspection and adjustment methods and techniques appropriate to the circumstances</li> <li>• conduct a minimum of three different removal, replacement and adjustment according to workplace, manufacturer and component supplier instructions or requirements</li> <li>• confirm effectiveness of work relating to component or accessory removal or replacement</li> <li>• complete workplace documentation requirements relevant to tasks.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• operational heavy commercial vehicles and a range of suitable components or accessories</li> <li>• equipment, hand and power tools and specialised heavy commercial vehicle tools and equipment appropriate for the removal and replacement of heavy commercial vehicle</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

components and accessories

- technical specifications and standards.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b>Work requirements</b> may include:</p>	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• written maintenance procedures</li> <li>• service instructions</li> <li>• product assembly instructions</li> <li>• manufacturer design specifications and installation instructions.</li> </ul>
<p><b>Workplace health and safety (WHS) requirements:</b></p>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<p><b>Tools and equipment</b> may include:</p>	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• hand-held power tools and air tools</li> <li>• garage equipment.</li> </ul>
<p><b>Ancillary components or accessories</b> may include:</p>	<ul style="list-style-type: none"> <li>• rear-view mirrors</li> <li>• mudguards and mudflaps</li> <li>• lighting system ancillary components</li> <li>• dust deflectors</li> <li>• reflectors</li> <li>• trim ancillary components</li> <li>• audio ancillary components</li> <li>• seat covers</li> <li>• adhesive signage and stickers</li> <li>• exhaust system ancillary components</li> <li>• wheel trims and hubcaps</li> <li>• heat shields</li> <li>• floor mats and carpet.</li> </ul>
<p><b>Workplace documentation</b> may include:</p>	<ul style="list-style-type: none"> <li>• job cards or work schedules</li> <li>• work bulletins</li> <li>• reporting and recording procedures</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

- organisational quality policies and procedures
- memos
- material safety data sheets (MSDS)
- regulatory and legislative requirements relating to heavy commercial vehicle safety
- organisational work specifications and requirements
- Australian standards.

## Unit Sector(s)

Competency field	Mechanical – Heavy Vehicle
Unit sector	Technical

## Custom Content Section

Not applicable.

## AURHTA3002 Service and repair trailers in excess of 4.5 tonnes

### Modification History

Release	Comment
Release 1	<p>Replaces AURT337273A Service and repair trailers in excess of 4.5 tonnes</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service and repair load carrying trailers without motive power, with a gross trailer mass rating (GTMR) or an aggregate trailer mass (ATM) over 4.5 tonnes and designed to be hauled by another vehicle.</p> <p>It requires the ability to identify and confirm work requirements, to use technical skills to service, repair and/or maintain trailers over 4.5 tonnes and to complete the work finalisation processes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake and document the adjustment, testing, servicing and repair of load carrying trailers in excess of 4.5 tonnes of varying types and in varying environments.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source service procedures and relevant workshop manuals and manufacturer information 1.4. Access and interpret state and territory regulations and requirements 1.5. Check and prepare tools, equipment and materials 1.6. Decide service and/or repair method in accordance with WHS, environmental and industry regulations and guidelines, and enterprise procedures 1.7. Set up work area
2. Adjust trailer to suit individual applications	2.1. Identify trailer application 2.2. Measure to ascertain ride height in preparation for trailer adjustment 2.3. Use methods, equipment and tolerances suitable to the trailer application and in accordance with manufacturer specifications 2.4. Carry out adjustment in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices
3. Test, service, repair and/or maintain trailer	3.1. Select appropriate diagnostic test 3.2. Undertake testing of trailer 3.3. Identify service, repair and/or maintenance requirements 3.4. Carry out service, repair and/or maintenance using methods, equipment and tolerances suitable to the trailer application in accordance with manufacturer specifications, WHS, and workplace environmental and sustainable procedures and practices
4. Verify system	4.1. Undertake visual and audible tests 4.2. Repair and eliminate identified issues 4.3. Organise for trailer to be test driven
5. Clean up work area and maintain equipment	5.1. Clean and inspect equipment and tooling according to workplace requirements 5.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 5.3. Finalise and process work completion documentation, update customer and warranty information and give to

ELEMENT	PERFORMANCE CRITERIA
	<p>appropriate persons, as required</p> <p>5.4.Clean work area, dispose of waste and scrap, and store re-useable material, tools and equipment in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to adjust, service and repair load carrying trailers with a GTMR or ATM of over 4.5 tonnes, including use of workplace computerised technology for the testing, reporting and recording of results
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to interpret technical information and specifications, and to complete workplace documents
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- types of load carrying trailers with a GTMR or ATM of over 4.5 tonnes
- operating principles and their relationship to each other of braking systems and components, including disc, drum and air braking systems, and their sub-systems
- operating principles of suspension types
- operating principles of steering systems
- operating principles of wheel alignment
- inspection and repair procedures applicable to the trailer type and including 5<sup>th</sup> wheel, king pins, landing gear and coupling, frames and sub-frames
- work organisation and planning processes
- Sub Assembly Registration Number (SARN) system
- Australian Road Transport (ARTSA) - Brake Code of Practice
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides related to the servicing and repairing of trailers with a GTMR or ATM of over 4.5 tonnes and their components
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the servicing and

**REQUIRED SKILLS AND KNOWLEDGE**

repairing of trailers with a GTMR or ATM of over 4.5 tonnes and including state and territory braking requirements for trailers

- organisational policies and procedures, including quality requirements and reporting and recording procedures, related to servicing and repairing of trailers with a GTMR or ATM of over 4.5 tonnes and their components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing and repair methods and techniques appropriate to the circumstances and trailer type
- complete preparatory activity in a systematic manner
- service and repair a variety of trailer types with a GTMR or ATM of over 4.5 tonnes to regulatory and manufacturer and component supplier requirements
- complete workplace and equipment records and workplace clean-up requirements.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate worksite
  - a range of trailers with a GTMR or ATM of over 4.5 tonnes requiring servicing and/or repairing
  - specifications and work instructions
  - equipment, hand and power tooling appropriate to servicing and repairing trailers with a GTMR or ATM of over 4.5 tonnes
  - relevant information, including manufacturer specifications.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

	<p>performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"><li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li><li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### **Trailers with a GTMR or ATM of over 4.5 tonnes**

Trailers with a GTMR or ATM over 4.5 tonnes may include:

- box trailers (skeleton type)
- heavy goods trailers
- low loaders
- farm trailers
- multiple car carriers
- mobile machinery/equipment
- cane bin trailers
- dolly trailers
- semi-trailers
- timber jinkers
- bus semi-trailers
- dog trailers
- pig trailers
- semi-trailer/B-double/B-triple/AB-triple/road train tail trailers
- B-double lead trailers
- B-triple lead trailers
- B-triple middle trailers
- converter dolly
- low loader dolly
- tandem trailers

#### **Axles**

Axles may include:

- single
- tandem
- tri-axle
- quad-axle
- non-pivoting axles
- pivoting front axles

#### **Servicing, repair and/or maintaining**

Servicing, repair and/or maintaining may include:

- minor adjustments
- operational testing
- replacement of fluids and filters

**RANGE STATEMENT****Verify system**

Verify system may include checking:

- sub-frame
- suspensions components
- axles
- wheel end
- wheels
- 5<sup>th</sup> wheel
- king pins
- landing gear
- coupling

**Tooling and equipment**

Tooling and equipment may include:

- hand tools
- testing equipment, including multimeters
- power tools
- air tools
- specialist tools and equipment
- lubricating equipment
- measuring equipment
- pressure gauges
- vacuum gauges
- manufacturer special stools

**Materials**

Materials may include:

- spare parts
- lubricants
- fluids
- cleaning materials

**Safe operating procedures**

Safe operating procedures may include:

- operational risk assessment and treatments
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others

**Information/documents**

Information/documents may include:

- verbal, written and graphical instructions issued by authorised internal and external persons
- parts listing prices and catalogues

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• inventory systems</li> <li>• Repair Times manuals</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards e.g. Australian Design Rules</li> <li>• Australian Road Transport (ARTSA) - Brake Code of Practice</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current driver's licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian Standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURHTB3001 Repair air braking systems

### Modification History

Release	Comment
Release 1	Replaces AURT311166A Repair air braking systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the repair of air braking systems and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing, analysis and repair of air braking systems and associated components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves vehicles equipped with air braking systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to repair air braking system and associated components	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for repair of air braking systems are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with air braking systems are observed
2. Test air braking systems and analyse results	2.1. Methods for tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Air braking test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is forwarded to persons for action in accordance with workplace procedures
3. Repair air braking system	3.1. Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2. Adjustments made during the repair are in accordance with manufacturer/component supplier specifications
4. Prepare vehicle for use or storage	4.1. Repair schedule documentation is completed 4.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3. Final inspection is made to ensure work is to workplace expectations 4.4. Vehicle is cleaned for use or storage to workplace expectations 4.5. Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the repair of air braking systems, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with air braking systems
- operating principles of air braking systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- test procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing air braking system for faults including internal and external air leaks
- interpreting test results
- conducting repair in accordance with workplace and manufacturer/component supplier requirements
- completing repair of air braking systems and associated components within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of air braking systems
- equipment, hand and power tooling appropriate to the repair of air braking systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Components</b>	Components may include compressors, actuators, pressure lines, receivers and valves
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice

**RANGE STATEMENT**

<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, pressure gauges and brake testing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the repair of air braking systems and associated components</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Brakes
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## AURHTB3002 Diagnose and repair heavy vehicle hydraulic braking systems

### Modification History

Release	Comment
Release 1	Replaces AURT310166A - Repair hydraulic braking systems Performance Criteria, Range Statement and Critical Aspects of Evidence updated to modern heavy vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair hydraulic braking systems fitted to heavy vehicles. It involves diagnosing deviations from correct operation, repairing hydraulic braking system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the hydraulic braking systems of heavy vehicles in the road transport, mining, construction and agricultural environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a heavy vehicle hydraulic braking system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a heavy vehicle hydraulic braking system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a heavy vehicle hydraulic braking system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of heavy vehicle hydraulic braking systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing heavy vehicle hydraulic braking systems
- legislation and regulatory requirements
- dangers of working with heavy vehicle hydraulic braking systems
- application, purpose and operating principles of heavy vehicle hydraulic braking systems
- testing procedures for heavy vehicle hydraulic braking systems
- repair procedures for heavy vehicle hydraulic braking systems
- post-repair testing procedures for heavy vehicle hydraulic braking systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of heavy vehicle hydraulic braking systems
- diagnose and repair heavy vehicle hydraulic braking systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with hydraulic braking faults relevant to the qualification being sought
- equipment appropriate for the testing of heavy vehicle hydraulic

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

braking systems

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of heavy vehicle hydraulic braking systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• heavy vehicle braking system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of heavy vehicle hydraulic braking systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• heavy vehicle hydraulic brake service requirements and repair manuals.</li> </ul>
<b>Diagnostic tests</b> may	<ul style="list-style-type: none"> <li>• visual inspection of braking system components</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• measurement of linkage and actuator adjustments</li> <li>• disc rotor thickness, parallelism and run-out measurements</li> <li>• brake drum diameter, out-of-round, and bell-mouthing measurements</li> <li>• brake fluid evaluation</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• poor braking performance</li> <li>• braking system leaks</li> <li>• dragging brakes</li> <li>• excessive braking pedal travel</li> <li>• abnormal braking system noise</li> <li>• worn, damaged or badly-adjusted components.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• mobile or stationary tests to evaluate braking system performance.</li> </ul>

**Unit Sector(s)**

Competency field	Mechanical – Heavy Vehicle
Unit sector	Technical - Brakes

**Custom Content Section**

Not applicable.

## AURHTB3007 Diagnose and repair heavy vehicle electronic braking systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair electronically controlled braking systems fitted to heavy vehicles. It involves diagnosing deviations from correct operation, repairing electronic braking system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the electronic braking systems of heavy vehicles in the road transport industry.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a heavy vehicle electronic braking system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Diagnosis options</b> are analysed and those most appropriate to the circumstances are selected and prepared</p>
2. Diagnose a heavy vehicle electronic braking system	<p>2.1. Diagnostic tests are performed according to workplace procedures and without causing damage to components or system</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. <b>Diagnosis findings</b> are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a heavy vehicle electronic braking system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace procedures</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - interpret gauges, diagnostic and test equipment
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to:
  - use workplace tools and equipment relating to the repair of electronic braking systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

- operate diagnostic and test equipment
- use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to heavy vehicle electronic braking system
- dangers of working with heavy vehicle electronic braking systems
- legislation and regulatory requirements of heavy vehicle electronic braking systems
- operating principles of heavy vehicle electronic braking systems
- application, purpose and operation of heavy vehicle electronic braking systems
- effects of associated systems on vehicle's electronic braking system
- techniques for reading and interpreting electrical circuit diagrams of electronic braking systems
- testing procedures of heavy vehicle electronic braking systems
- repair procedures of heavy vehicle electronic braking systems
- post-repair testing procedures of heavy vehicle electronic braking systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of heavy vehicle electronic braking systems
- conduct diagnosis and repair procedures of heavy vehicle electronic braking systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with electronic braking faults relevant to the qualification being sought
- equipment appropriate for the testing of heavy vehicle electronic braking systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of heavy vehicle electronic braking systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• heavy vehicle electronic braking system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of heavy vehicle electronic braking systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• National Environment Protection Measure for Diesel Vehicles (Guidelines)</li> <li>• heavy vehicle service requirements and repair manuals.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Diagnosis options</i></b> may include:	<ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• component inspection and evaluation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• steering axle or drive axle brake modulator faults</li> <li>• sensor faults</li> <li>• electronic control unit (ECU) faults.</li> </ul>
<b><i>Diagnosis findings</i></b> may include:	<ul style="list-style-type: none"> <li>• comparison of test results with manufacturer specifications</li> <li>• recommendations for repair, adjustment or replacement of parts.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including:               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• on-board diagnostic system assessment procedures.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Brakes

**Custom Content Section**

Not applicable.

## AURHTB4003 Overhaul braking system components (heavy)

### Modification History

Release	Comment
Release 1	<p>Replaces AURT410145BA Overhaul braking system components (heavy)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out an overhaul to hydraulic, mechanical, vacuum and power assisted, and electric heavy braking system components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of the work requirement, preparation for work, overhauling of braking system components, conducting of serviceability tests on components, preparing brake components for use or storage and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to heavy vehicles, trailers and towable equipment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul braking system components	1.1.Nature and scope of the work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical and/or calibration requirements for overhaul are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with stored energy as in emergency braking actuators are observed 1.7.Dangers working with brake dust and preventative measures are observed
2. Overhaul braking system components	2.1.Information is accessed and interpreted from manufacturer/component supplier specifications 2.2.Braking system components are overhauled using approved methods, equipment and materials, in accordance with manufacturer/component supplier specifications 2.3.Overhaul of braking system components/sub assemblies is completed without causing damage to any component or system 2.4.All braking systems component overhaul activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
3. Conduct serviceability tests on components	3.1.Methods for the conduct of the test is implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2.Observations on the performance of the component is noted during the test 3.3.A determination is made as to the serviceability of the component 3.4.Failed components are tagged for rework 3.5.Documentation of observations are completed
4. Prepare brake components for use or storage	4.1.Inspection is made to ensure safety features are in place 4.2.Final inspection is made to ensure work is to workplace expectations 4.3.Brake component is presented for use or stored to

ELEMENT	PERFORMANCE CRITERIA
	workplace expectations 4.4.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use workplace technology related to the overhaul of heavy vehicle braking systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- health hazards working with brake dust
- hydraulic principles
- operating principles of heavy braking systems and their components, including air compressors
- overhaul procedures
- test procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the overhaul of a range of braking system components in accordance with workplace and manufacturer/component supplier requirements
- interpreting test results
- completing the work within workplace timeframes
- presentation/storage of brake components in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the overhaul of heavy vehicle braking systems
- equipment, hand and power tooling appropriate to the overhaul of heavy vehicle braking systems
- activities covering the mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

	<p>performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Actuating mechanisms</b>	Actuating mechanisms may include fluid operated, mechanically operated, power assisted, anti-lock brake systems, computer systems
<b>System components</b>	System components may include disc pads, master cylinders, brake shoes, brake callipers, brake hoses, brake actuators, mechanical devices, and hydraulic and pneumatic valves
<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental</b>	Environmental requirements are to include but are not limited to

<b>RANGE STATEMENT</b>	
<b>requirements</b>	waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for removal/adjustment, lifting and supporting equipment, brake dust extraction equipment, measuring instruments and overhaul machining equipment
<b>Materials</b>	Materials may include spare parts, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the overhaul of heavy vehicle braking systems</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURHTB4004 Overhaul air braking systems and components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT411145A Overhaul air braking systems/components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the overhaul of air braking systems/components</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of the work requirement, preparation for work, testing, analysis of results, disassembly, overhaul and reassembly of air braking systems and components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes vehicles fitted with air braking systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to test air braking systems/ components	<p>1.1.Nature and scope of the work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for testing air braking systems are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with air braking systems are observed</p>
2. Test air braking systems/ components and analyse results	<p>2.1.Methods for the conduct of the air braking systems tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to appropriate persons for action in accordance with workplace procedures</p>
3. Prepare to disassemble and overhaul air braking systems/components	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information required are identified and sourced</p> <p>3.3.Technical and tooling requirements for the disassembly and overhaul are identified and support equipment is identified and prepared</p>
4. Carry out the overhaul and reassembly of air braking systems/ components	<p>4.1.Methods for the conduct of the overhaul and reassembly are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.All adjustments made during the overhaul are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle/ equipment for use or storage	<p>5.1.Overhaul schedule documentation is completed</p> <p>5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>5.3. Final inspection is made to ensure work is to workplace expectations</p> <p>5.4. Vehicle/equipment is cleaned for use or stored to workplace expectations</p> <p>5.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to overhauling air braking systems/components, including the use of measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with air braking systems
- operating principles of air braking systems/components and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- air braking systems inspection/service and repair procedures
- air braking systems overhaul procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting of the test results
- conducting the overhaul in accordance with workplace and manufacturer/component supplier requirements
- completing overhaul of a range of air braking systems and associated components within workplace timeframes
- vehicle/equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to overhauling air braking systems/components
- equipment, hand and power tooling appropriate to overhauling air braking systems/components
- activities covering the mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

	<p>performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations

<b>RANGE STATEMENT</b>	
<b>authorities</b>	and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the overhaul of air braking systems and components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Brakes
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## AURHTB4006 Diagnose complex faults in heavy commercial vehicle braking systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in heavy commercial vehicle braking systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of braking systems of heavy commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning heavy commercial vehicle braking are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies or discrepancies or <b>faults</b> in heavy commercial vehicle braking systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to heavy commercial vehicle braking systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of heavy commercial vehicle braking systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to heavy commercial vehicle braking systems
- concepts, types, functions, operations and limitations of heavy commercial vehicle braking systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to heavy commercial vehicle braking systems
- testing procedures for heavy commercial vehicle braking systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different heavy commercial vehicle braking systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults heavy commercial vehicle braking systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated heavy commercial

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

vehicle braking system faults

- tools and equipment appropriate for the diagnosis of complex faults in heavy commercial vehicle braking systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i> may include:</b>	<ul style="list-style-type: none"> <li>• indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations</li> <li>• direct faults in input sensors, output actuators, wiring harness, computer systems, calibration or adjustment specifications</li> <li>• component specifications, component assembly, component damage and system modifications</li> <li>• indirect mechanical faults</li> </ul>
<b><i>Tests</i> may include:</b>	<ul style="list-style-type: none"> <li>• wiring and connector integrity</li> <li>• operation and specification of input and output devices</li> <li>• controlling electronic components and computers</li> <li>• data interpretation and readings related to direct indirect and intermittent causes</li> <li>• hydraulic systems testing</li> <li>• electrical systems testing</li> <li>• mechanical systems testing</li> <li>• road test</li> </ul>
<b><i>Testing equipment</i> may include:</b>	<ul style="list-style-type: none"> <li>• decelerometer brake test meter</li> <li>• brake fluid tester</li> <li>• ABS sensor tester</li> <li>• analogue and digital multimeters, lab oscilloscopes, scan tools, test lights and test LEDs</li> <li>• pulse generators</li> <li>• manufacturer and component supplier testing equipment</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Diagnostic processes*** may include:

- analysing manufacturer and component supplier specifications, schematics and operational procedures related to heavy commercial vehicle braking systems
- six-step troubleshooting plan
- discover-investigate-fix methodology

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Brakes

**Custom Content Section**

Not applicable.

## AURHTB5005 Analyse and evaluate heavy vehicle braking system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT571393A Analyse and evaluate heavy vehicle braking system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate heavy vehicle braking systems in order to initiate action to sustain, vary or enhance performance. It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning heavy vehicle engine systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Heavy vehicle braking system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary heavy vehicle braking systems, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- heavy vehicle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the types, functions, operations and limitations of heavy vehicle foundation braking systems/components.
- detailed knowledge of the types, functions and limitations of friction materials associated with heavy vehicle braking systems.
- detailed knowledge of the types, function, operations and limitations of abs braking systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle air braking (truck and trailer) systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle air braking (multiple trailer) systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle air over

**REQUIRED SKILLS AND KNOWLEDGE**

- hydraulic braking systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle compression braking systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle retardant systems/ components.
- general knowledge of the Australian design rules requirements related to heavy vehicle braking.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of automotive digital computing systems.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three heavy vehicle braking systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for heavy vehicle braking systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, heavy vehicle braking systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Braking systems</b>	Braking systems to be covered in this unit are to include foundation, ABS, ABS with traction control, air brakes (truck and trailer), air brakes (multiple trailer), compression braking, vehicle retardants, and air over hydraulic systems.
<b>Timing and balancing</b>	Brake timing and balancing are covered.
<b>System failures</b>	<ul style="list-style-type: none"> <li>Braking system failures covered by this unit are to include air supply capacity, application and release times, brake balance, brake drum wear, calibration/adjustment specifications, component damage, conductors - piping specifications, contamination, friction material abnormalities, leaks, pump-up times.</li> <li>Braking system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.

**RANGE STATEMENT**

<b>Testing equipment</b>	Testing equipment is to include air gauges, multimeter and Tappley meter, and may include brake timer and electronic stethoscope.
<b>Tests</b>	<ul style="list-style-type: none"> <li>• Tests to be conducted are to include system performance, air supply build-up time, prime mover and trailer application time, park brake application, brake fluid boiling point, rotor and drum wear, pad and lining thickness, brake pedal travel, handbrake mechanism travel, NVH, directional control, ABS operation and performance, sensor/actuator and wiring harness integrity, sampling (collection and processing) and monitoring/analysis of computer-based diagnostic systems.</li> <li>• Tests may also include braking during cornering, brake roller testing, friction material wear rate, disc drum and rotor temperature.</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to heavy vehicle braking systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging brake system technology and technology changes.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURHTD2001 Inspect and service heavy commercial vehicle suspension systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect and service suspension systems and suspension components fitted to heavy commercial vehicles.</p> <p>The unit involves an inspection of the suspension system to note deviations from correct operation as well as service to ensure the system complies with manufacturer's specifications.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the suspension systems of heavy commercial vehicles.</p> <p>Work does not apply to agricultural, off-the-road (OTR), light vehicle or motorcycle suspension systems.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and service suspension system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting and servicing <b>heavy vehicle suspension systems</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect suspension system	<p>2.1. Inspection is carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Service suspension system	<p>3.1. <b>Service options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Service and adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p>
4. Clean up work area and finalise work processes	<p>4.1. <b>Final inspection</b> is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. <b>Service schedule documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to:
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection and servicing of heavy commercial vehicle suspension systems
- technology skills to use technology to collect and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- operating principles of heavy commercial vehicle suspension systems
- methods of sourcing information relevant to inspecting and servicing heavy commercial vehicle steering systems
- inspection procedures of heavy commercial vehicle suspension systems
- service procedures of heavy commercial vehicle suspension systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect and service a range of heavy commercial vehicle suspension systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy commercial vehicles with suspension systems relevant to the qualification being sought
- tools and equipment appropriate for the inspection and servicing of heavy commercial vehicle suspension systems
- specifications and workplace instructions.

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• heavy commercial vehicle suspension system inspection and service methods, processes and equipment.</li> </ul>
<b>Heavy vehicle suspension systems</b> may include:	<ul style="list-style-type: none"> <li>• airbag, coil spring, leaf spring and torsion bar types</li> <li>• shock absorbers</li> <li>• dead axle, independent and adaptive</li> <li>• gas, hydraulic, pneumatic, mechanical or rubber suspension</li> <li>• lateral and longitudinal arms</li> <li>• ball joints</li> <li>• self-levelling device, ride control, height control.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection and servicing of heavy commercial vehicle suspension systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• heavy commercial vehicle service requirements and repair manuals.</li> </ul>
<i>Service options</i> may include:	<ul style="list-style-type: none"> <li>• lubricant application and replacement</li> <li>• adjustments and operational testing.</li> </ul>
<i>Final inspection</i> may include:	<ul style="list-style-type: none"> <li>• final check of suspension systems and components</li> <li>• checking of suspension system operation during mobile or stationary tests</li> <li>• cleaning of heavy commercial vehicle.</li> </ul>
<i>Service schedule documentation</i> may include:	<ul style="list-style-type: none"> <li>• heavy commercial vehicle service book</li> <li>• job card or work order</li> <li>• workplace computerised or written records and invoice.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical - Heavy Vehicles
<b>Unit sector</b>	Technical – Steering and Suspension

**Custom Content Section**

Not applicable.

## AURHTD3002 Repair steering systems (heavy vehicle)

### Modification History

Release	Comment
Release 1	Replaces AURTH315166A Repair steering systems (heavy vehicle) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out repairs to wheeled and/or tracked type steering systems and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, tests and analysis of results, completion of repairs and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence should be contextualised to the qualification to which it is being applied.</p> <p>Work involved includes wheeled and/or tracked type vehicles and heavy vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repair of steering system	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or operational requirements for inspecting and repairing steering systems are sourced and support tooling and equipment are identified and prepared</p> <p>1.6.Warnings in relation to working with wheeled and tracked vehicles are observed</p>
2. Conduct test and analyse results	<p>2.1.Methods for steering system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Inspection/test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Carry out repairs	<p>3.1.Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.Adjustments, including wheel bearing adjustments are made during the repair are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle/equipment for customer and/or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace procedures</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- operating principles of mechanical and hydraulic steering systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- dangers of working with wheeled and tracked vehicles
- steering systems testing and adjusting procedures
- steering systems repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting test results
- completing repair to a range of steering systems to manufacturer/component supplier requirements
- completing repairs within workplace timeframes
- vehicle/equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of steering systems
- equipment, hand and power tooling appropriate to the repair of steering systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

**EVIDENCE GUIDE**

	<p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Repair of steering systems and equipment</b>	Repair of steering systems and equipment may include: <ul style="list-style-type: none"> <li>• component and / or system adjustments</li> <li>• ball joints, struts, idler arms, steering boxes, steering columns, steering racks, king pin and steering actuators</li> <li>• electronic controlled steering systems</li> <li>• full power steering, including articulated vehicles</li> <li>• tracked type vehicles</li> </ul>
<b>Methods</b>	Methods are to include: <ul style="list-style-type: none"> <li>• operational testing, electrical testing and hydraulic testing</li> <li>• visual, aural and functional assessments (including: damage, corrosion, wear)</li> <li>• principles, angles and geometry of vehicle wheel alignment</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental</b>	Environmental requirements are to include but are not limited to

<b>RANGE STATEMENT</b>	
<b>requirements</b>	waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, testing equipment and devices, including camber, caster, KPI and toe out on turns measuring systems
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of steering systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURHTD3003 Repair suspension systems (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH316166A Repair suspension systems (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the repairs to suspension systems and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspections/testing and analysis of outcomes and completion of repair actions and work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence should be contextualised to the qualification to which it is being applied.</p> <p>Work involves wheeled vehicles, including chain drive and tracked type vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repairs to suspension systems and associated components	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or measurement requirements for suspension systems are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with wheeled and tracked vehicles are observed
2. Conduct inspection/test and analysis	2.1. Methods for inspection/test procedures and manufacturer/component supplier specifications 2.2. Inspection/test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is forwarded to persons for action in accordance with workplace procedures
3. Carry out repairs	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information are identified and sourced 3.3. Technical and tool requirements for repair are identified and support equipment is identified and prepared 3.4. Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.5. Adjustments made during the repair are in accordance with manufacturer/component supplier specifications
4. Prepare vehicle for use or storage	4.1. Repair schedule documentation is completed 4.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3. Final inspection is made to ensure work is to workplace expectations 4.4. Vehicle/equipment is cleaned for use or storage to

ELEMENT	PERFORMANCE CRITERIA
	workplace expectations 4.5. Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with equipment on chassis
- types and layout of service/repair manuals (hard copy and electronic)
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting inspection/test results
- conducting repair of a range of systems in accordance with manufacturer/component supplier and workplace requirements
- completing repairs within workplace timeframes
- vehicle/equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of suspensions systems
- equipment, hand and power tooling appropriate to the repair of suspensions systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

**EVIDENCE GUIDE**

	<p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Suspension systems</b>	<ul style="list-style-type: none"> <li>• Suspension systems may be gas, hydraulic, pneumatic, mechanical or rubber suspension</li> <li>• Suspension systems may include: <ul style="list-style-type: none"> <li>• lateral and longitudinal arms, independent suspension</li> <li>• ball joints</li> <li>• self-levelling device, ride control, height control</li> </ul> </li> </ul>
<b>Repair methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>• functional testing, pressure testing, electrical testing</li> <li>• visual, aural and functional assessments (including: damage, corrosion, fluid levels, fluid leaks, air leaks, wear, alignment)</li> <li>• adjustment of shock absorbers</li> <li>• accumulators</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</p>
<b>Environmental</b>	<p>Environmental requirements are to include but are not limited to</p>

<b>RANGE STATEMENT</b>	
<b>requirements</b>	waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load testing devices, computerised diagnostic equipment and shock absorber testers
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of suspension systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURHTD3004 Carry out wheel alignment operations (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH317108A Carry out wheel alignment operations (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit identifies the competence required to carry out wheel alignment operations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, carrying out wheel alignment operations and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence should be contextualised to the qualification to which it is being applied.</p> <p>Wheel alignment operations may be for heavy vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Carry out wheel alignment pre-checks	1.1.Information is gained from customer outlining handling characteristics and history 1.2.Nature and scope of work requirements are identified and confirmed 1.3.Procedures and information such as workshop manuals and specifications, and tools required, are sourced 1.4.Vehicle/equipment tests are performed to confirm need for alignment 1.5.Vehicle wheel alignment pre-checks are carried out in accordance with manufacturer/component supplier procedures and workplace requirements
2. Perform vehicle wheel alignment	2.1.Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2.Wheel alignment measuring equipment is connected to vehicle in accordance with manufacturer/component supplier specifications 2.3.Wheel alignment is completed without causing damage to any component or system 2.4.Corrective adjustments/repairs are carried out in accordance with manufacturer/component supplier specifications 2.5.Vehicle/equipment is tested to confirm accuracy of adjustments according to manufacturer/component supplier specifications and customer requirements 2.6.Wheel alignment testing and adjustment is carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies 2.7.Workplace documentation is completed and dealt with relevant to alignment outcomes
3. Complete documentation and service history documents	3.1.Service history is updated in accordance with workplace requirements 3.2.Before and after alignment measurements are documented and included in customer documentation 3.3.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operating principles of steering geometry and wheel alignment
- wheel alignment procedures
- relationships between fault symptoms and component defects
- chassis alignment checks
- wheel alignment system types and their construction
- use of measuring tools and testing equipment
- use of hand tools and specialised equipment
- pre-check procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• conducting the alignment of a range of wheels in accordance with workplace and manufacturer/component supplier requirements</li> <li>• accurately interpreting wheel alignment measurements</li> <li>• completing wheel alignment within workplace timeframes</li> <li>• vehicle/equipment is presented to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to wheel alignment operations</li> <li>• equipment, hand and power tooling appropriate to wheel alignment operations</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of</p>

**EVIDENCE GUIDE**

	<p>performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Wheel alignment operations</b>	<p>Wheel alignment operations are to include one or more of the following systems:</p> <ul style="list-style-type: none"> <li>• drive axles</li> <li>• two and four wheel steer, tandem steer</li> <li>• single wheel steer</li> <li>• trailer axle</li> <li>• Methods are to include:</li> <li>• chassis/underframe alignment checks</li> <li>• measurement and adjustment</li> <li>• road testing (before and after adjustments)</li> <li>• visual, aural and functional assessment (including: damage, corrosion, wear, measurement)</li> <li>• alignment equipment operation</li> <li>• string lining</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</p>

**RANGE STATEMENT**

<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tools, tyre gauge and/or specialist tools for removal/adjustment, mechanical and/or electronic wheel alignment equipment, measuring equipment, lifting equipment, two head and four head wheel aligner
<b>Materials</b>	Materials may include minor parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to wheel alignment operations</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURHTD4006 Diagnose complex faults in heavy commercial vehicle steering and suspension systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in heavy commercial vehicle steering and suspension systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of steering and suspension systems of heavy commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning heavy commercial vehicle steering and suspension systems are accessed and interpreted</p> <p>1.3. Workplace health and safety (WHS) requirements, equipment and system isolation requirements, and personal protection needs are observed and applied throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or faults with heavy commercial vehicle steering and suspension systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to diagnose faults	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, tests and testing process are identified and selected from the range of available options</p> <p>2.4. Testing equipment is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected diagnostic processes are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to heavy commercial vehicle steering and suspension systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of heavy commercial vehicle steering and suspension systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles heavy commercial vehicle steering and suspension systems
- types, functions, operations and limitations of heavy commercial vehicle steering and suspension systems and components
- theory of diagnosis, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment relating to heavy commercial vehicle steering and suspension systems
- testing procedures of heavy commercial vehicle steering and suspension systems
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different heavy commercial vehicle steering and suspension systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in heavy commercial vehicle steering and suspension systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated heavy commercial

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- vehicle steering and suspension system faults
- tools and equipment appropriate for the diagnosis of complex faults in heavy commercial vehicle steering and suspension systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• indirect faults caused by the influence of external electrical and electronic systems, which may or may not be faulty in their primary operations</li> <li>• direct faults in input sensors, output actuators, wiring harnesses and computer systems</li> <li>• component damage and system modifications</li> <li>• incorrect axle alignment.</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>• wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings relating to direct, indirect and intermittent causes</li> <li>• use of a shock absorber dynamometer</li> <li>• axle alignment checks</li> <li>• on-road testing</li> <li>• component testing.</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• shock absorber dynamometer</li> <li>• analogue and digital multimeters</li> <li>• lab oscilloscopes</li> <li>• scan tools</li> <li>• test lights and test LEDs</li> <li>• pulse generators</li> <li>• manufacturer and component supplier testing equipment.</li> </ul>
<b><i>Diagnostic processes</i></b> may	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures relating to heavy vehicle</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	steering and suspension systems <ul style="list-style-type: none"><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology.</li></ul>
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## Unit Sector(s)

Competency field	Mechanical – Heavy Vehicle
Unit sector	Technical – Steering and Suspension

## Custom Content Section

Not applicable.

## AURHTD5005 Analyse and evaluate heavy vehicle steering and suspension system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT571093A Analyse and evaluate heavy vehicle steering and suspension system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate heavy vehicle steering and suspension systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning heavy vehicle steering and suspension systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Heavy vehicle steering and suspension system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary heavy vehicle steering and suspension systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- heavy vehicle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetics and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of steering system theory, including steering angles (camber, castor, king pin inclination, toe-in and toe-out).
- general knowledge of the functions of hydraulic pressure within steering and suspension systems.
- detailed knowledge of the types, functions, operations and limitations of heavy vehicle steering and suspension systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle mechanical steering systems/components
- detailed knowledge of the types and influences of single and multiple trailer operations on heavy vehicle power steering systems/components.

## REQUIRED SKILLS AND KNOWLEDGE

- general knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three heavy vehicle steering and suspension systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measures.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for heavy vehicle steering and suspension systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, heavy vehicle steering and suspension systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or

<b>EVIDENCE GUIDE</b>	
	<p>authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Steering and suspension systems</b>	Steering and suspension systems to be covered in this unit are to include mechanical, power and split-air suspension.
<b>Steering system failures</b>	Heavy vehicle steering system failures covered by this unit are to include mechanical steering, power steering, tyre wear, driveability, vibration, directional stability, tracking, calibration/adjustment specification, component specifications, component assembly, component damage and system modifications.
<b>Suspension system failures</b>	Heavy vehicle suspension system failures covered by this unit are to include erratic steering, suspension trailer influences, mechanical damage, chassis alignment, component damage and systems modifications.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include tape measure, tyre pressure gauge, string line, adjustable electronic bubble level and laser wheel

<b>RANGE STATEMENT</b>	
	alignment system or equivalent wheel and chassis alignment equipment.
<b>Tests</b>	Tests to be conducted are to include tyre pressures, tyre tread, toe-in, toe-out turns, camber, castor, king pin inclination, king pin wear, steering linkage and bar specification, axle track, average axle track, axle parallelity, chassis alignment, ride height, wheel bearing specification, drag link specifications, turning radius left/right, air bag leveller operation.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to heavy vehicle steering and suspension systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Steering and Suspension
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## AURHTE2001 Remove and install heavy vehicle engine assemblies

### Modification History

Release	Comment
Release 1	Replaces AURT201164A Remove and install engine assemblies Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to remove and install engine assemblies fitted to heavy vehicles. It involves the identification of work requirements, preparation for work, removal of assemblies, installation of engine assemblies and completion of work finalisation processes, including cleaning and documentation, and post-installation testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the removal and installation of engine assemblies of heavy vehicles in the road transport, mining, construction, agricultural and marine environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove heavy vehicle engine assemblies	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to removing heavy vehicle engine assemblies</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Removal options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Warnings in relation to working with lifting and jacking equipment are observed</p>
2. Carry out the removal of heavy vehicle engine assemblies	<p>2.1. Engine assembly is removed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. <b>Observations</b> are noted and documented during the removal of engine assembly</p>
3. Install heavy vehicle engine assemblies	<p>3.1. <b>Installation options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools and equipment are selected and prepared</p> <p>3.3. Engine assembly is installed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p>
4. Carry out post-installation tests and adjustments	<p>4.1. <b>Post-installation adjustments</b> are carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>4.2. <b>Post-installation tests</b> are carried out according to workplace procedures and manufacturer and component supplier specifications</p>
5. Clean up work area and finalise work processes	<p>5.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>5.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>5.3. Workplace documentation is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret gauges, instruments and measuring equipment
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the removal and installation of heavy vehicle engine assemblies
- technology skills to use technology to collect and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with lifting and jacking equipment
- methods of disconnecting related systems, including:
  - air conditioning system
  - cooling system
  - electrical systems
  - exhaust system
  - fuel system
  - power steering system
  - transmission systems, including:
    - automatic transmission

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- manual transmission
- removal procedures for heavy vehicle engine assemblies, including:
  - correct use of lifting and supporting equipment
  - item tagging procedures
  - correct disposal methods of hazardous substances
- installation procedures for heavy vehicle engine assemblies
- post-installation testing and adjustment procedures for heavy vehicle engine assemblies, including:
  - pre-start procedures
  - operational testing and run-in procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- remove and install a range of heavy vehicle engine assemblies according to workplace, manufacturer and component supplier requirements
- present heavy vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles and heavy vehicle engine assemblies
- tools and equipment appropriate for the removal and installation of heavy vehicle engine assemblies
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• removal and installation methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the removal and installation of heavy vehicle engine assemblies</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• heavy vehicle service requirements and repair manuals.</li> </ul>
<b>Removal options</b> may	<ul style="list-style-type: none"> <li>• removal of the engine assembly alone or with the transmission assembly</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>removal with the engine attached to chassis.</li> </ul>
<b><i>Observations</i></b> may include:	<ul style="list-style-type: none"> <li>routing of system components</li> <li>damaged or faulty components</li> <li>components and parts required for engine installation.</li> </ul>
<b><i>Installation options</i></b> may include:	<ul style="list-style-type: none"> <li>installation of the engine assembly alone or with the transmission assembly</li> <li>installation with the engine attached to chassis.</li> </ul>
<b><i>Post-installation adjustments</i></b> may include:	<ul style="list-style-type: none"> <li>throttle adjustments</li> <li>coolant replacement</li> <li>oil replacement</li> <li>tappet adjustment</li> <li>re-tensioning of cylinder head bolts.</li> </ul>
<b><i>Post-installation tests</i></b> may include:	<ul style="list-style-type: none"> <li>stationary and mobile engine performance tests</li> <li>testing of associated systems, including:               <ul style="list-style-type: none"> <li>air conditioning system</li> <li>cooling system</li> <li>power steering system</li> <li>ancillary systems</li> <li>transmission system.</li> </ul> </li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical - Engines

**Custom Content Section**

Not applicable.

## AURHTE3002 Repair engines and associated engine components (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH301166A Repair engines and associated engine components (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out repair of an engine, and associated engine components on compression ignition engines.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, engine system testing and analysis, repair of engines and associated components and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence should be contextualised to the qualification to which it is being applied.</p> <p>Engines may include those for, heavy vehicles, mobile plant, agricultural machinery and marine craft.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repair of engines	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks</p> <p>1.4.Procedures and information such as workshop manuals and specifications, and tools, are sourced</p> <p>1.5.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6.Technical and/or calibration requirements for engine systems repair are sourced and support equipment is identified and prepared</p> <p>1.7.Warnings in relation to working with engines and associated systems are observed</p>
2. Conduct engine systems tests and analyse results	<p>2.1.Methods for engine systems tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Engine is started and run up to operating temperature and checked for leaks, abnormal noises and pressures</p> <p>2.3.Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.4.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.5.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Carry out repair	<p>3.1.Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.Adjustments made during the repair are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle/ equipment for use or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle/equipment is cleaned for use or storage to</p>

ELEMENT	PERFORMANCE CRITERIA
	workplace expectations 4.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- National Environmental Protection Measures for Diesel Vehicles as applicable to tasks
- engine construction and operation relevant to application
- types and layout of service/repair manuals (hard copy and electronic)
- engine/component repair procedures
- engine removal and replacement procedures
- measuring and testing procedures
- equipment/component safety requirements
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- dismantling, evaluating, assembling, adjustment, measuring and testing
- repairing a range of engines and associated components to workplace requirements and specifications
- repairing of engine and associated components completed within workplace guidelines and timeframes

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of engines and associated engine components
- equipment, hand and power tooling appropriate to the repair of engines and associated engine components
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

## EVIDENCE GUIDE

	<p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Engines</b>	<p>Engines may be:</p> <ul style="list-style-type: none"> <li>four stroke compression ignition engines for heavy vehicle, agricultural machinery, mobile plant and marine craft</li> <li>two stroke compression ignition for heavy vehicle, agricultural machinery, mobile plant, and marine craft</li> </ul>
<b>Repair methods</b>	Repair methods are to include identification of component wear/damage, fluid leakage, removal, dismantling, reassembly, refitting, adjusting and testing
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company

<b>RANGE STATEMENT</b>	
	quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tools, power tools, lifting and jacking equipment, specialist tooling and lubricant dispensing equipment
<b>Materials</b>	Materials may include spare parts, consumables, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repairing engines and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines Engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURHTE4003 Diagnose complex faults in heavy vehicle diesel engines

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to diagnose complex faults in heavy vehicle diesel engines systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical, electronic or mechanical by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies to and includes system fault and failure diagnosis of diesel engines in the road transport, mining, construction and agricultural environments.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning heavy vehicle diesel engines systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies or discrepancies or <b>faults</b> in heavy vehicle diesel engines systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to heavy vehicle diesel engine systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of heavy vehicle diesel engine systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to heavy vehicle diesel engine systems
- concepts, types, function, operations and limitations of heavy vehicle diesel engines, including:
  - fuel, ignition, intake, exhaust, lubrication, cooling and engine mounting systems/components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to heavy vehicle diesel engine systems
- testing procedures for heavy vehicle diesel engine systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different heavy vehicle diesel engines systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults heavy vehicle diesel engine systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated heavy vehicle diesel

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

engine system faults

- tools and equipment appropriate for the diagnosis of complex faults in heavy vehicle diesel engine systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults may include:***

- engine (poor performance, excessive oil consumption, engine stoppages)
- fuel (contamination, flow, pressure, leakage)
- ignition (no-start, no-run, misfire, erratic operation, lack of power, charging)
- intake (leakage, noise, vibration, inadequate control)
- exhaust (pressure, abnormal emissions)
- lubrication (pressure, flow, leakage, abnormal engine wear, inadequate filtration, sludge formation, excessive deposits, overheating)
- cooling (overcooling, insufficient cooler flow, coolant out of specification, lack of air flow, internal corrosion)
- mounting (noise, vibration, hardness, clutch shudder, erratic transmission control)
- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- component specifications, component assembly, component damage and system modifications
- indirect engine mechanical faults.

***Tests may include:***

- component wear analysis, compression, cylinder leakage, engine performance, exhaust gas sampling, flow, oil consumption, pressure, sample collection and processing, specific gravity, temperature and vacuum.
- mechanical systems testing

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>road test.</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>bore gauges, compression gauges, cooling system analyser, dial gauges, exhaust gas analysers, micrometers, multimeter, oscilloscope, pressure gauges, stethoscope, telescopic gauges, temperature gauges, tachometer, timing lights, vacuum gauges, verniers, and may include anemometer, barometer, hygrometer, specific gravity gauge</li> <li>manufacturer and component supplier testing equipment</li> </ul>
<b><i>Diagnostic processes</i></b> may include:	<ul style="list-style-type: none"> <li>analysing manufacturer and component supplier specifications, schematics and operational procedures related to heavy vehicle diesel engines</li> <li>component substitution</li> <li>six-step troubleshooting plan</li> <li>discover-investigate-fix methodology.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Engines

**Custom Content Section**

Not applicable.

## AURHTE5004 Analyse and evaluate heavy vehicle engine and fuel system faults

### Modification History

Release	Comment
Release 1	Replaces AURT571293A Analyse and evaluate heavy vehicle engine and fuel system faults Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to analyse and evaluate heavy vehicle engine and fuel systems in order to initiate action to sustain, vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.  The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning heavy vehicle engine and fuel systems are accessed and interpreted.</p> <p>1.3. National Environment Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks.</p> <p>1.4. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.5. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.6. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.5. Heavy vehicle engine and fuel system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstances, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary heavy vehicle engine and fuel systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- National Environment Protection Measures for Diesel Vehicles.
- heavy vehicle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the types, functions, operations and limitations of heavy vehicle engines.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle fuel systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle engine electrical systems/ components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle intake systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle exhaust systems/components.

## **REQUIRED SKILLS AND KNOWLEDGE**

- detailed knowledge of the types, function, operations and limitations of heavy vehicle lubrication systems/ components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle cooling systems/components.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of automotive digital computing systems
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three heavy vehicle engine and fuel systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for heavy vehicle engine and fuel systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, heavy vehicle engine and fuel systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

## **EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	<ul style="list-style-type: none"> <li>The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.</li> </ul>
<b>Engine and fuel systems</b>	<ul style="list-style-type: none"> <li>Engine and fuel systems to be covered in this unit are to include the engine, computer controlled management systems, closed loop diesel engine management systems and related fuel, electrical, intake, exhaust, lubrication and cooling systems.</li> </ul>
<b>Engine and fuel system failures</b>	<ul style="list-style-type: none"> <li>Engine and fuel system failures covered by this unit are to include engine management, engine performance (response, fuel consumption, power), charging, contamination, damaged components, emissions, forced induction, fuel pressure/supply, lighting leaks, operating temperature, overheating, sensors, starting.</li> <li>Engine and fuel system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with National Environment Protection Measures for Diesel Vehicles.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.

**RANGE STATEMENT**

<b>Testing equipment</b>	Testing equipment is to include compression gauges, computerised diagnostic system, cooling system analyser, dynamometer, manometer, multimeter, pressure gauges, pyrometer, refractometer, temperature gauges, vacuum gauges and may include anemometer, barometer, hygrometer, specific gravity gauge.
<b>Tests</b>	Tests to be conducted are to include component wear analysis, compression, cylinder leakage, engine performance, exhaust gas sampling, flow, oil consumption, pressure, sample collection/processing, specific gravity, temperature, vacuum, boost pressures.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to heavy vehicle engine and fuel systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURHTF2001 Inspect heavy commercial vehicle fuel systems and components

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect heavy commercial vehicle fuel systems and components for the purpose of establishing safe operating conditions and making any repair or maintenance recommendations.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to the fuel systems and components of heavy commercial vehicles and may include inspecting fuel systems and components on or off the vehicle.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for inspection	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting heavy commercial vehicle fuel systems</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> relating to heavy commercial vehicles are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect fuel systems and components to determine condition	<p>2.1. Work area is checked to ensure safe working conditions</p> <p>2.2. <b>Fuel systems and components</b> are inspected according to workplace or manufacturer requirements and without causing damage to components or systems</p> <p>2.3. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.4. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Clean up work area and finalise work processes	<p>3.1. Tools and equipment are checked and stored according to workplace expectations</p> <p>3.2. <b>Documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection operations
- numeracy skills to perform simple measurements and assess tolerances
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection of heavy commercial vehicle fuel systems and components
- technology skills to use technology to collect and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- workplace safety procedures related to heavy commercial vehicle movements and pedestrian traffic
- operating principles of heavy commercial vehicle fuel systems
- methods of sourcing information relevant to inspecting heavy commercial vehicle fuel systems
- inspection procedures of heavy commercial vehicle fuel systems and components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect a range of heavy commercial vehicle fuel systems and components according to workplace, manufacturer and component supplier requirements
- record results of inspection according to workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy commercial vehicle fuel systems and components relevant to the qualification being sought
- tools and equipment appropriate for the inspection of heavy commercial vehicle fuel systems and components
- specifications and workplace instructions.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• heavy commercial vehicle fuel systems and component inspection methods, processes and equipment</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection of heavy commercial vehicle fuel systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• heavy commercial vehicle inspection requirements and repair manuals.</li> </ul>
<b>Fuel systems and</b>	<ul style="list-style-type: none"> <li>• fuel tanks and fittings</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>components</i></b> may include:	<ul style="list-style-type: none"><li>• fuel lines</li><li>• fuel filters</li><li>• fuel pumps</li><li>• fuel injectors</li><li>• water separators.</li></ul>
<b><i>Documentation</i></b> may include:	<ul style="list-style-type: none"><li>• job card or work order</li><li>• workplace computerised or written customer records and invoice</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Fuel systems

**Custom Content Section**

Not applicable.

## AURHTJ1001 Inspect heavy commercial vehicle wheels and tyres

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect heavy commercial vehicle wheels and tyres for the purpose of establishing safe operating conditions and making any repair or maintenance recommendations.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to heavy commercial vehicle wheels and tyre assemblies and vehicles and may include inspecting wheels and tyre assemblies on or off the vehicle.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for inspection	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting heavy commercial vehicles wheels and tyres</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> relating to heavy commercial vehicle wheels and tyre assemblies are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect wheels and tyre assemblies to determine condition	<p>2.1. Work area is checked to ensure safe working conditions</p> <p>2.2. <b>Wheels and wheel attachments, tyre condition</b> and inflation fittings are inspected according to workplace or manufacturer requirements and without causing damage to components or systems</p> <p>2.3. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.4. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Clean up work area and finalise work processes	<p>3.1. Tools and equipment are checked and stored according to workplace expectations</p> <p>3.2. <b>Documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection operations
- numeracy skills to interpret numerical information printed on tyres
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection of heavy commercial vehicle wheels and tyres
- technology skills to use technology to collect and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with tyres and air pressure
- dangers associated with split and multi-piece wheel rims
- workplace safety procedures related to heavy commercial vehicle movements and pedestrian traffic
- vehicle wheel and tyre terminology, including types of rim and tyre construction and tyre coding
- inspection procedures of heavy commercial vehicle wheels and tyre assemblies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect a range of heavy commercial vehicle wheels and tyres according to workplace, manufacturer and component supplier requirements
- record results of inspection according to workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy commercial vehicle wheel and tyre assemblies relevant to the qualification being sought
- tools and equipment appropriate for the inspection of heavy commercial vehicle tyres and wheel assemblies
- specifications and work instructions.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• heavy commercial vehicle wheels and tyre assembly inspection methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• <b>workplace</b> procedures related to the identification and fitting of tyres and rims for specific heavy applications</li> <li>• tyre manufacturer technical information</li> <li>• vehicle and equipment operator manuals</li> <li>• charts, tables, graphics, work bulletins</li> <li>• vehicle workshop manuals</li> <li>• Australian Standards for heavy commercial vehicle rims and tyres</li> <li>• Australian Design Rules as they relate to heavy commercial vehicle rims and tyres.</li> </ul>
<b><i>Wheels and wheel attachments</i></b> may include:	<ul style="list-style-type: none"> <li>• single and dual configurations</li> <li>• wheel nuts</li> <li>• wheel caps or trims</li> <li>• axle and bearing fittings</li> <li>• one-piece rims</li> <li>• split rims and attachments</li> <li>• locking rings.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Tyre condition*** may include:

- tread depth
- tread wear patterns
- flat spots
- cuts and damage
- sidewall condition
- separation
- delamination
- under-inflation
- over-inflation
- deformation
- penetrations.

***Documentation*** may include:

- job card or work order
- workplace computerised or written customer records and invoice.

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Wheels and Tyres

**Custom Content Section**

Not applicable.

## AURHTJ2002 Select heavy vehicle tyres and rims for specific applications

### Modification History

Release	Comment
Release 1	<p>Replaces AURT317968A Identify and fit tyres and rims for specific applications (heavy) and AURT217985A Fit tyres and rims for specific applications (heavy)</p> <p>Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to select heavy vehicle tyres and rims to suit specific applications. It involves identifying and confirming work requirements, preparing for work, selecting tyres and rims and completing work finalisation processes.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the heavy vehicle tyres and rims of heavy vehicles in the road transport, mining, construction, agricultural and other industrial environments.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to select tyres and rims for specific applications	1.1.Workplace instructions are used to determine job requirements 1.2.Workplace Health and Safety (WHS) requirements are observed and applied throughout the work 1.3.Procedures and information for selecting tyres and rims are sourced
2. Select tyre and rims for specific applications	2.1.Information required for selecting heavy vehicle tyres and rims is accessed from manufacturer and component supplier specifications and correctly interpreted 2.2.Tyre and rim options are analysed to identify technical compliance and economic benefits 2.3.Selection procedures are carried out according to legislation, industry and workplace policies 2.4.Selected products are those which most closely meet customer requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow oral instructions
  - ask questions to clarify instructions or procedures
  - report inspection results
- learning skills to identify sources of information and assistance
- literacy skills to:
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - document repairs and parts required
  - complete job card
- numeracy skills to interpret numerical information printed on tyres
- problem-solving skills to:
  - recognise limitations and seek timely advice
  - seek information and assistance as required to solve problems

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to heavy vehicle tyres and rims
- Australian Design Rules relating to heavy vehicle tyres and rims
- heavy vehicle tyre and rim terminology and codes
- heavy vehicle tread patterns, rim and tyre types and their applications

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- access and interpret information required for selecting tyres and rims
- select a range of heavy vehicle tyres and rims for heavy vehicle according to workplace, manufacturer and component supplier requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with tyres and rims relevant to the qualification being sought
- equipment and material suitable for sourcing information related to selecting heavy vehicle tyres and rims
- workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Workplace instructions**  
may include:

- computer-generated instructions
- verbal instructions
- written instructions.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Procedures and information***  
may include:

- verbal or written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- regulatory and legislative requirements pertaining to automotive industry, including Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards
- heavy vehicle service requirements and repair manuals.

## Unit Sector(s)

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Wheels and Tyres

## Custom Content Section

Not applicable.

## AURHTJ2003 Remove, inspect, and refit heavy vehicle wheel assemblies

### Modification History

Release	Comment
Release 1	Replaces AURT217665A - Remove, fit and inspect wheel assemblies  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to remove, inspect and fit wheel assemblies fitted to heavy vehicles. It involves diagnosing deviations from correct operation, removal, inspection and fitting procedures of wheel assemblies.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the wheel assemblies of heavy vehicles in the road transport, mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove wheel assembly	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements relating to removing heavy vehicle wheel assemblies</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Removal options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate tools and equipment are selected and prepared</p>
2. Remove and inspect wheel assembly	<p>2.1. Wheel assembly is removed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. <b>Inspection of wheel assembly</b>, mounting points and fittings for damage and wear is carried out</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Fit wheel assembly	<p>3.1. <b>Fitting options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools and equipment are selected and prepared</p> <p>3.3. Wheel assembly is fitted according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>3.4. Wheel operation is checked for correct assembly, run-out and alignment according to workplace procedures and manufacturer and component supplier specifications</p>
4. Clean up work area and finalise work processes	<p>4.1. <b>Final inspection</b> is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to interpret gauges, instruments and measuring equipment
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the removal, inspection and fitting of heavy vehicle wheel assemblies
- technology skills to use technology to collect and provide information.

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with heavy vehicle wheel assemblies
- lifting and supporting procedures for heavy vehicles
- types and applications of wheels and rims, including:
  - cast-spoke wheels
  - disc wheels, including:
    - stud-piloted wheels
    - hub-piloted wheels
  - single-piece tyre-to-rim assemblies
  - two-piece tyre-to-rim assemblies
  - three-piece tyre-to-rim assemblies
- removal, inspection and fitting procedures of heavy vehicle wheel assemblies
- post-fitting procedures and checks of heavy vehicle wheel assemblies



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- remove, inspect and fit a range of heavy vehicle wheel assemblies
- remove, inspect and fit heavy vehicle wheel assemblies according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles and heavy vehicle wheel assemblies
- tools and equipment appropriate for the removal, inspection and fitting of heavy vehicle wheel assemblies
- specifications and workplace instructions.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Workplace instructions** may include:

- computer-generated instructions
- verbal instructions
- written instructions.

**Workplace health and safety (WHS) requirements:**

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

**Procedures and information** may include:

- safe work procedures relating to the removal, inspection and fitting of heavy vehicle wheel assemblies
- verbal, written and graphical instructions
- signage
- work schedules, plans and specifications
- work bulletins or memos
- material safety data sheets (MSDS)
- diagrams or sketches
- regulatory and legislative requirements relating to the automotive industry
- Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards
- heavy vehicle service requirements and repair manuals

**Removal options** may include:

- front wheel removal
- rear wheel removal
- dual wheel removal
- removal of other systems to gain access to wheel

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Inspection of wheel assembly</i></b> may include:	<ul style="list-style-type: none"><li>• tyre condition</li><li>• rim condition</li><li>• wheel bearing condition</li></ul>
<b><i>Fitting options</i></b> may include:	<ul style="list-style-type: none"><li>• manual handling or motor-assisted handling of wheel assemblies</li><li>• manual or power-tool tightening of wheel nuts</li></ul>
<b><i>Final inspection</i></b> may include:	<ul style="list-style-type: none"><li>• wheel assembly run-out and alignment testing</li><li>• correct operation is ensured of vehicle systems affected by the removal and fitting of wheel assemblies</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Wheels and Tyres

**Custom Content Section**

Not applicable.

## AURHTJ2004 Demount, inspect, repair and mount agricultural equipment tyres and tubes

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to perform repair operations to tyres and tubes fitted to agricultural equipment. It involves demounting agricultural equipment tyres and tubes from wheel rims, inspecting the tyre and rim to assess condition, performing minor tyre and tube repairs and remounting tyres and tubes to rims.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the tyres and tubes of agricultural equipment and machinery.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Not applicable.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to demount, repair and mount tyres and tubes	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements for the demounting, repair and mounting of <b>agricultural equipment tyres and tubes</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. Wheel type, rim type and mounting system is identified and <b>procedures and information</b> are sourced and interpreted</p> <p>1.4. Wheel assembly is visually inspected to assess immediate threat to health and safety according to legislation, manufacturer and site procedures</p> <p>1.5. Appropriate <b>tools and equipment</b> are selected and prepared</p>
2. Demount tyre from rim	<p>2.1. Tyre is demounted from rim according to workplace procedures and manufacturer and component supplier specifications</p> <p>2.2. Demounting of the tyre from the rim is completed without causing damage to any components</p>
3. Inspect tyre, tube and rim	<p>3.1. Inspection is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.2. Inspection results are compared with manufacturer and component supplier specifications to indicate compliance or non-compliance</p> <p>3.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs</p>
4. Repair and mount tyres and tubes	<p>4.1. Repair is carried out according to manufacturer and component supplier and workplace procedures</p> <p>4.2. Tyre is mounted to rim according to manufacturer and component supplier and workplace procedures and without causing damage to components</p> <p>4.3. Wheel assembly is checked to confirm component compatibility, serviceability and correct assembly prior to inflating according to manufacturer and site procedures</p> <p>4.4. Tyre is inflated according to manufacturer and component supplier and workplace procedures</p> <p>4.5. <b>Post-repair testing</b> is carried out according to manufacturer and component supplier and workplace procedures</p>
5. Clean up work area and finalise work processes	<p>5.1. Final inspection is made to ensure work is to workplace expectations and wheel is presented ready for use</p> <p>5.2. Tools and equipment are checked and stored according to workplace expectations</p>

	5.3. Workplace documentation is completed according to workplace procedures
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to interpret gauges, instruments and measuring equipment
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the removal, inspection and fitting of agricultural equipment tyre assemblies
- technology skills to use technology to collect and provide information.

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- hazard identification procedures and risk control methods
- types and classifications of agricultural equipment wheels and rims
- inspection procedures of agricultural equipment tyre assemblies
- tyre deflation methods of agricultural equipment tyres and rims
- demounting procedures of agricultural equipment wheel assemblies, including:
  - safety lock rim
  - rim or hub mounted multi piece rim
  - one piece wheel/rim
- repair procedures of agricultural equipment tyre and tubes
- mounting procedures of agricultural equipment tyre assemblies
- inflation procedures of agricultural equipment tyre assemblies
- post-mounting inspection procedures of agricultural equipment tyre assemblies



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• demount and mount a range of agricultural equipment tyres according to workplace and manufacturer and component supplier requirements</li> <li>• present wheel in a condition that complies with workplace requirements.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• a range of agricultural equipment tyre assemblies</li> <li>• equipment appropriate for the demounting, repair and mounting of agricultural equipment tyre assemblies</li> <li>• specifications and workplace instructions.</li> </ul>
<b>Method of assessment</b>	Assessment must satisfy the endorsed Assessment Guidelines of

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Agricultural equipment tyres and tubes</i></b> may include:	<ul style="list-style-type: none"> <li>• deep lug tyres</li> <li>• radial tractor tyres</li> <li>• bias ply tractor tyres.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection, removal, repair and fitting of agricultural tyres</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• agricultural equipment tyre service requirements and repair manuals</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• lifting equipment</li> <li>• hand tools, power tools</li> <li>• jacks and support stands</li> <li>• tyre handling equipment.</li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• visual inspection of wheel assemblies</li> <li>• monitoring of tyre pressure</li> <li>• leak detection methods.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical – Mobile Plant Equipment
<b>Unit sector</b>	Technical – Wheels and Tyres

## Custom Content Section

Not applicable.

## AURHTJ2006 Remove, inspect, repair and fit tyres and tubes (heavy)

### Modification History

Release	Comment
Release 1	<p>Replaces AURT217966A Remove, inspect, repair and fit tyres and tubes (heavy)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to remove and refit heavy vehicle tyres and tubes from rims, inspect tyres and tubes to assess serviceability and carry out tyre and tube repairs.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal, repair and fitting of heavy tyres and tubes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes all single or dual wheel heavy vehicles other than those requiring wheel ballast.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove, repair and fit heavy tyres and tubes	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical requirements for repair and fitting of tyres and tubes are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with rims, tyres and tubes are observed
2. Conduct inspection and analyse results	2.1.Methods for the inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is processed in accordance with workplace procedures
3. Carry out removal, repair and refit	3.1.Methods for the removal, repair and refit are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2.Adjustments made during the removal, repair and refit are in accordance with manufacturer/component supplier specifications
4. Prepare equipment for use or storage	4.1.Repair schedule documentation is completed 4.2.Final inspection is made to ensure safety features are in place 4.3.Final inspection is made to ensure work is to workplace expectations 4.4.Equipment is cleaned for use or storage to workplace expectations 4.5.Job card is processed in accordance with workplace procedures



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- Apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal, repair and fitting of heavy tyres and tubes, including the use of measuring equipment, computerised technology, specialist tooling and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with tyre and tube repair equipment
- operating principles of tyre and tube repair equipment and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting inspection results
- conducting the removal, repair and refit of tyres and tubes in accordance with workplace and manufacturer/component supplier requirements
- completing removal, repair and refit of wheels, tyres and tubes and associated components within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the removal, repair and fitting of heavy tyres and tubes
- equipment, hand and power tooling appropriate to the removal, repair and fitting of heavy tyres and tubes
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, breaker devices, gauges, jacks, hoists and pressure testing devices

**RANGE STATEMENT****Communications**

Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers

**Information/documents**

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the removal, repair and fitting of heavy tyres and tubes
- regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards

**Unit Sector(s)****Unit sector**

Mechanical - Heavy Vehicle

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Wheels and Tyres

## AURHTJ3005 Identify and apply pneumatic wheeled traction performance enhancement systems (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURT309627A Identify and apply pneumatic wheeled traction performance enhancement systems (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to identify and apply pneumatic wheeled traction performance enhancement techniques, such as ballasting, chains, inflation and tread patterns.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work involved includes heavy vehicle mobile equipment that requires improved traction techniques.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to identify traction performance enhancement systems	<p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are understood</p> <p>1.3. Procedures and information such as workshop manuals and specifications are sourced</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5. Technical requirements for wheeled traction are sourced and support equipment is identified and prepared</p> <p>1.6. Warnings in relation to working with wheeled vehicles are observed</p>
2. Prepare to apply a traction performance enhancement system	<p>2.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>2.2. Procedures and information are identified and sourced</p> <p>2.3. Technical and tool requirements for traction performance enhancement are identified and support equipment is identified and prepared</p>
3. Carry out traction performance enhancement procedures	<p>3.1. Methods for implementing traction performance enhancement are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2. Wheel adjustments made during the traction enhancement are in accordance with manufacturer/ component supplier specifications</p>
4. Prepare vehicle for use or storage	<p>4.1. Vehicle modification schedule documentation is completed</p> <p>4.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3. Final inspection is made to ensure work is to workplace expectations</p> <p>4.4. Vehicle is cleaned for use or storage to workplace expectations</p> <p>4.5. Job card is completed and delivered to appropriate persons</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the application of traction performance enhancement techniques, including the use of specialist tooling, measuring equipment and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled vehicles and equipment
- operating principles of traction performance enhancement systems and their relationship to each other
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• interpreting traction performance enhancement requirements</li> <li>• applying the technique/system in accordance with workplace and manufacturer/component supplier requirements</li> <li>• completing process within workplace timeframes</li> <li>• vehicle presentation to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to application of traction performance enhancement techniques</li> <li>• equipment, hand and power tooling appropriate to application of traction performance enhancement techniques</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of</p>

## EVIDENCE GUIDE

	<p>performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Traction performance enhancement techniques</b>	Traction performance enhancement techniques and systems may include ballasting, chains, inflation and tread pattern variations
<b>Traction techniques</b>	Traction techniques need to be varied in accordance with terrain, soil condition and load
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations

<b>RANGE STATEMENT</b>	
<b>authorities</b>	and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters and gauges
<b>Materials</b>	Materials may include ballast material, air supply and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the application of traction performance enhancement techniques</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Wheels and Tyres
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## AURHTL4001 Inspect, repair and diagnose alternative fuel systems for heavy vehicle engines

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH404584A Inspect, repair and diagnose alternative fuel systems for heavy vehicle engines</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to inspect, repair and diagnose and analyse alternative fuel systems in heavy vehicle engines.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of the work requirement, preparation for work, inspection, repair and diagnosis of alternative fuel systems for heavy vehicle engines and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes all alternative fuel systems used for heavy vehicle engines.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and repair alternative fuel systems in heavy vehicle engines	<ul style="list-style-type: none"><li>1.1.Nature and scope of work requirements are identified and confirmed.</li><li>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work.</li><li>1.3.Procedures and information such as workshop manuals and specifications, and tools, are sourced.</li><li>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared.</li><li>1.5.Technical and/or calibration requirements for the inspection of alternative fuel system for heavy vehicle engines are sourced and support equipment is identified and prepared.</li><li>1.6.Warnings in relation to working with alternative fuel systems are observed.</li></ul>
2. Inspect alternative fuel systems in heavy vehicle engines	<ul style="list-style-type: none"><li>2.1.Methods for system inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</li><li>2.2.Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</li><li>2.3.Results are documented with evidence and supporting information and recommendation(s) made.</li><li>2.4.Report is processed in accordance with workplace procedures.</li></ul>
3. Repair alternative fuel systems in heavy vehicle engines	<ul style="list-style-type: none"><li>3.1.Methods for repairs are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</li><li>3.2.Adjustments made during repairs are in accordance with manufacturer/component supplier specifications.</li><li>3.3.Technical and/or calibration requirements for the repair of alternative fuel system for heavy vehicle engines are sourced and support equipment is identified and prepared.</li></ul>
4. Prepare to undertake the diagnosis of alternative fuel systems for heavy vehicle engines	<ul style="list-style-type: none"><li>4.1.Nature and scope of the work requirements are identified and confirmed.</li><li>4.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work.</li><li>4.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced.</li><li>4.4.Method options are analysed and those most appropriate to</li></ul>

ELEMENT	PERFORMANCE CRITERIA
	<p>the circumstances are selected and prepared.</p> <p>4.5. Technical and/or calibration requirements for the diagnosis of alternative fuel systems are sourced and support equipment is identified and prepared.</p> <p>4.6. Warnings in relation to working with alternative fuel systems are observed.</p>
<p>5. Conduct alternative fuel systems for heavy vehicle engines diagnosis and analyse results</p>	<p>5.1. Methods for the conduct of the diagnosis are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>5.2. Alternative fuel system test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>5.3. Results are documented with evidence and supporting information and recommendations(s) made.</p> <p>5.4. Report is processed in accordance with workplace procedures.</p>
<p>6. Prepare the vehicle for use or storage</p>	<p>6.1. Report documentation completed.</p> <p>6.2. Final inspection is made to ensure safety features are in place.</p> <p>6.3. Final inspection is made to ensure work is to workplace expectations.</p> <p>6.4. Vehicle is cleaned for use or stored to workplace expectations.</p> <p>6.5. Job card is processed in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection, repair and diagnosis of alternative fuel systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements.
- dangers of working with alternative fuel systems on heavy vehicle engines
- operating principles of alternative fuel systems on heavy vehicle engines
- range of common gas system faults and their causes, symptoms and effects
- diagnosis procedures
- test procedures.
- enterprise quality procedures
- work organisation and planning processes
- Australian Gas Industry Standards for automotive

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the diagnosis in accordance with workplace and manufacturer/component supplier requirements
- interpreting and documenting the test results
- completing the inspection ,repair and diagnosis of alternative fuel systems within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian and Gas Industry Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the inspection, repair and diagnosis of alternative fuel systems
- equipment, hand and power tooling appropriate to the inspection, repair and diagnosis of alternative fuel system for heavy vehicle engines
- activities covering the mandatory task requirements
- specifications and work instructions.

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.

## EVIDENCE GUIDE

	<p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process.</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Repair methods and sequence</b>	Repair methods and sequence are to include isolation of fault(s); dismantling, inspection and evaluation; replacement of component parts; assembly and completion of operational tests and records.
<b>Faults</b>	Faults to be diagnosed may include poor engine performance, abnormal consumption, engine malfunction and fuel leaks.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory</b>	Statutory/regulatory authorities may include Federal,

RANGE STATEMENT	
<b>authorities</b>	State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, leak testing devices and decanting equipment.
<b>Materials</b>	Materials may include spare parts and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the inspection, repair and diagnosis of alternative fuel system for heavy vehicle engines</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules, gas industry standards and Australian Standards</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Alternative Fuels
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## AURHTQ2001 Inspect heavy commercial vehicle driveline components

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect heavy commercial vehicle driveline components for the purpose of establishing safe operating conditions and making any repair or maintenance recommendations.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to the driveline components of heavy commercial vehicles and may include inspecting driveline components on or off the vehicle.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for inspection	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting heavy commercial vehicle driveline components</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> relating to heavy commercial vehicles are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect driveline components to determine condition	<p>2.1. Work area is checked to ensure safe working conditions</p> <p>2.2. <b>Driveline components</b> are inspected according to workplace or manufacturer requirements and without causing damage to components or systems</p> <p>2.3. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.4. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Clean up work area and finalise work processes	<p>3.1. Tools and equipment are checked and stored according to workplace expectations</p> <p>3.2. <b>Documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection operations
- numeracy skills to perform simple measurements and assess tolerances
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection of heavy commercial vehicle driveline components
- technology skills to use technology to collect and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- workplace safety procedures related to heavy commercial vehicle movements and pedestrian traffic
- operating principles of heavy commercial vehicle driveline systems and components
- methods of sourcing information relevant to inspecting heavy commercial vehicle driveline systems and components
- inspection procedures of heavy commercial vehicle driveline components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect a range of heavy commercial vehicle driveline components according to workplace, manufacturer and component supplier requirements
- record results of inspection according to workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy commercial vehicles with driveline components relevant to the qualification being sought
- tools and equipment appropriate for the inspection of heavy commercial vehicle driveline components
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• heavy commercial vehicle driveline component inspection methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection of heavy commercial vehicle driveline components</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• heavy commercial vehicle inspection requirements and repair manuals.</li> </ul>
<b><i>Driveline components</i></b> may	<ul style="list-style-type: none"> <li>• universal joints, constant velocity joints and centre bearings</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"><li>• drive-shafts, half-shafts and prop-shafts</li><li>• yokes and flanges.</li></ul>
<i>Documentation</i> may include:	<ul style="list-style-type: none"><li>• job card or work order</li><li>• workplace computerised or written customer records and invoice.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Driveline Final Drives

**Custom Content Section**

Not applicable.

## AURHTQ3002 Repair final drive assemblies (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH312666A Repair final drive assemblies (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out repairs to final drive assemblies.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing, analysis of results and carrying out repairs to final drive assemblies and associated components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved may include heavy vehicles and agricultural machinery and earthmoving equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repairs to final drive assemblies	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for final drive assembly repair are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with final drive assemblies are observed</p>
2. Conduct final drive assembly tests and analyse results	<p>2.1.Methods for test on final drive assembly are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Carry out repairs	<p>3.1.Methods for repairs are implemented in accordance with workplace procedures and manufacture/component supplier specifications</p> <p>3.2.Adjustments made during the repair are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle for use or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled and tracked vehicles and equipment
- the identification of application, purpose and operation
- types and layout of service/repair manuals (hard copy and electronic)
- inspection and test procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a final drive assembly relative to the qualification being sought
- interpreting test results
- repair of final drive assembly and associated components completed within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of final drive assemblies
- equipment, hand and power tools appropriate to the repair of final drive assemblies
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Variables</b>	Variables may include bevel, spiral bevel and hypoid gearing
<b>Repair methods and sequence</b>	Repair methods and sequence are to include isolation of fault(s), dismantling, inspection and evaluation, replacement of components parts, assembly and completion of operational tests and records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations

<b>RANGE STATEMENT</b>	
<b>authorities</b>	and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, pulling, pushing and load testing devices
<b>Materials</b>	Materials may include lubricants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair of final drive assemblies and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURHTQ3003 Repair final drive - driveline (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH313166A Repair final drive – driveline (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out repairs to the driveline and its components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of results, completion of repairs to final drive and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes heavy vehicles and agricultural machinery and earthmoving equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repairs to final drive driveline	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for repair of drivelines are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with rotating components are observed
2. Test driveline and analyse results	2.1. Methods for tests associated with drivelines is implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Driveline test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is processed in accordance with workplace procedures
3. Carry out repairs	3.1. Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2. Adjustments made during the repair work are in accordance with manufacturer/component supplier specifications
4. Prepare equipment for use or storage	4.1. Repair schedule documentation is completed 4.2. Final inspection is made to ensure protective guards, safety features are in place 4.3. Final inspection is made to ensure work is to workplace expectations 4.4. Equipment is cleaned for use or storage to workplace expectations 4.5. Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- the identification of application, purpose and operation
- dangers of working with rotating shafts and gear systems
- types and layout of service/repair manuals (hard copy and electronic)
- testing procedures, including balancing shaft
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a driveline relative to the qualification being sought
- interpreting test results
- conducting repair in accordance with workplace and manufacturer/component supplier requirements
- completing repair of driveline and associated components within workplace timeframes
- equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to repairing final drivelines
- equipment, hand and power tooling appropriate to repairing final drivelines
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the

**EVIDENCE GUIDE**

	<p>automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Variables</b>	Variables may include universal joints, constant velocity joints and centre bearings
<b>Repair methods and sequence</b>	Repair methods and sequence are to include isolation of fault(s), dismantling, inspection and evaluation, replacement of components parts, assembly and completion of operational tests and records
<b>Faults</b>	Faults to include: <ul style="list-style-type: none"> <li>• driveline vibration</li> <li>• abnormal noises</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company

<b>RANGE STATEMENT</b>	
	quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tools, meters, gauges and load testing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of final drive (driveline) and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Driveline and Final Drives
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## AURHTR3005 Diagnose and repair heavy trailer electronically controlled roll stability systems

### Modification History

Release 1	New unit of competency
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### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair electronically controlled roll stability systems fitted to trailers over 4.5 tonnes. It involves diagnosing deviations from correct operation, repair operations of roll stability system components and associated systems, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the roll stability systems of trailers in the road transport environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a heavy trailer roll stability system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a heavy trailer roll stability system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a heavy trailer roll stability system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - interpret gauges, diagnostic and test equipment
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools related to the repair of heavy trailer roll stability systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
  - computerised technology and communication devices

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing heavy trailer roll stability systems
- dangers of working with heavy trailer roll stability systems
- legislation and regulatory requirements
- application, purpose and operating principles of heavy trailer roll stability systems
- testing procedures for heavy trailer roll stability systems
- repair procedures for heavy trailer roll stability systems
- post-repair testing procedures for heavy trailer roll stability systems
- identification of the effects of associated systems on heavy trailer roll stability systems

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• diagnose and repair a range of heavy trailer roll stability systems</li> <li>• diagnose and repair heavy trailer roll stability systems according to workplace, manufacturer and component supplier requirements</li> <li>• present vehicle in a condition that complies with workplace requirements.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• heavy trailer with roll stability faults relevant to the qualification being sought</li> <li>• equipment appropriate for the testing of heavy trailer roll stability systems</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

<b>Overview of assessment</b>	
	<ul style="list-style-type: none"><li>• specifications and workplace instructions</li><li>• tools appropriate for the repair, replacement and adjustment of heavy trailer roll stability systems.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b>Workplace instructions</b> may include:</p>	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<p><b>Job requirements</b> may include:</p>	<ul style="list-style-type: none"> <li>• heavy trailer roll stability system diagnosis and repair methods, processes and equipment</li> </ul>
<p><b>Workplace health and safety requirements:</b></p>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<p><b>Procedures and information</b> may include:</p>	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of heavy trailer roll stability systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• heavy trailer roll stability service requirements and repair manuals.</li> </ul>
<p><b>Diagnostic tests</b> may</p>	<ul style="list-style-type: none"> <li>• isolation of faults</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"><li>• visual inspection of heavy trailer roll stability components</li><li>• component inspection and evaluation.</li></ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"><li>• electrical and electronic component faults</li><li>• electronically-controlled braking system faults.</li></ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"><li>• component repair procedures, including</li><li>• removal, replacement and adjustment procedures</li><li>• dismantle, repair, re-assembly and adjustment procedures.</li></ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"><li>• on-board diagnostic system assessment procedures.</li></ul>

## Unit Sector(s)

Competency field	Mechanical – Heavy Vehicle
Unit sector	Technical- Electrical and Electronic

## Custom Content Section

Not applicable.

## AURHTX3001 Repair transmissions - manual (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH306666A Repair transmissions – manual (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out removal, repair and replacement of manual transmissions.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of systems, removal, repair and replacement of manual transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>For repairs to electronic controlled drive management refer to AURETR3044 Service and repair electronic drive management systems.</p> <p>This unit of competence applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"> <li>heavy vehicles, agricultural machinery and mobile plant equipment.</li> </ul> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake testing of manual transmission	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for testing of manual transmissions are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with manual transmissions are observed</p>
2. Test manual transmission and analyse results	<p>2.1.Methods for tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Road/site test is conducted for abnormalities</p> <p>2.3.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.4.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.5.Report is processed in accordance with workplace procedures</p>
3. Prepare to repair manual transmissions	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for repair are identified and support equipment is identified and prepared</p>
4. Carry out repairs	<p>4.1.Methods for repairs are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments made during repairs are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle/ equipment for use or storage	<p>5.1.Repair schedule documentation is completed</p> <p>5.2.Road/site test is conducted to ensure transmission operation is to manufacturer/component supplier specifications</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>5.3. Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.4. Final inspection is made to ensure work is to workplace expectations</p> <p>5.5. Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>5.6. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with transmissions
- the identification of application, purpose and operation
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting testing results
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a manual transmission relative to the qualification being sought
- conducting repairs in accordance with workplace and manufacturer/component supplier requirements
- completing repair of transmissions and associated components within workplace timeframes
- vehicle/transmission presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to repairing manual transmissions
- equipment, hand and power tooling appropriate to repairing manual transmissions
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>road testing, test under operating conditions</li> <li>visual, aural and functional assessment (including: fluid leakage, gear selection, wear, damage, corrosion)</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements:</p> <ul style="list-style-type: none"> <li>manual transmissions, front and/or rear wheel drive configurations</li> <li>transmission must be of multiple speed constant mesh or synchromesh design</li> </ul> <p>Other variables may include:</p> <ul style="list-style-type: none"> <li>belt drive transmission</li> <li>power take off assemblies</li> <li>multiple forward and reverse gears</li> <li>multi countershaft</li> <li>synchronised and non-synchronised gear selection</li> <li>metal and non-metal gears</li> <li>electrical/pneumatic control</li> <li>transverse/longitudinal mounting</li> <li>helical, double helical and spur gears</li> <li>transfer case</li> </ul>
<b>Repair methods and sequence</b>	Repair methods and sequence are to include isolation of fault(s); dismantling, inspection and evaluation; replacement of component parts; assembly and completion of operational tests and records
<b>Faults</b>	Faults to include noisy operation, jumping out of gear, external oil leaks, loss of drive
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tools, meters, gauges and load testing devices
<b>Materials</b>	Materials may include fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair, removal and replacement of manual transmissions and/or associated components</li> <li>• regulatory/legislative requirements pertaining to automotive</li> </ul>

**RANGE STATEMENT**

	<p>industry, including Australian Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURHTX3002 Inspect, test and replace transmissions - automatic (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH307165A Inspect, test and replace transmissions - automatic (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the inspection, testing and replacement of automatic and semi-automatic transmissions and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspecting, testing and analysis of systems, replacement of automatic and semi-automatic transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes automatic and semi-automatic transmissions in heavy vehicles, agricultural machinery and mobile plant equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and test transmission	<p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3. Procedures and information such as workshop manuals and specifications, and tools, are sourced</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5. Technical and/or calibration requirements for testing of transmissions are sourced and support equipment is identified and prepared</p> <p>1.6. Warnings in relation to working with semi automatic, automatic transmissions are observed</p>
2. Inspect and test the transmission and analyse results	<p>2.1. Methods for system inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2. Methods for system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.3. Road/site test is conducted to identify transmission operational abnormalities</p> <p>2.4. Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.5. Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.6. Report is processed in accordance with workplace procedures</p>
3. Prepare to remove and replace transmission	<p>3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2. Procedures and information are identified and sourced</p> <p>3.3. Technical and tool requirements for removal and replacement are identified and support equipment is identified and prepared</p>
4. Carry out removal and replacement	<p>4.1. Methods for removal and replacement are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2. Adjustments made during the removal and replacement are</p>

ELEMENT	PERFORMANCE CRITERIA
	in accordance with manufacturer/component supplier specifications
5. Prepare vehicle/ equipment for use or storage	5.1. Removal and replacement schedule documentation is completed 5.2. Final inspection is made to ensure protective guards, safety features are in place 5.3. Final inspection is made to ensure work is to workplace expectations 5.4. Vehicle/equipment is cleaned for use or storage to workplace expectations 5.5. Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with transmissions
- operating principles of automatic and semi automatic transmissions and their relationship to other systems
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- removal and replacement procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting diagnosis results
- conducting repair and/or replacement of a range of transmissions in accordance with workplace and manufacturer/component supplier requirements
- completing work within workplace timeframes
- vehicle/transmissions presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to carrying out repairs to automatic and semi-automatic transmissions and associated components
- equipment, hand and power tooling appropriate to carrying out repairs to automatic and semi-automatic transmissions and associated components
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

## EVIDENCE GUIDE

	<p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Transmissions</b>	<p>Transmissions may include:</p> <ul style="list-style-type: none"> <li>• automatic and semi automatic transmissions, power shift transmissions</li> <li>• power take off assemblies</li> <li>• pre-selective transmissions</li> <li>• electronically controlled transmissions</li> </ul>
<b>Testing methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>• operational testing, testing under operating conditions, test bench testing, electrical testing</li> <li>• visual, aural and functional assessment (including fluid leakage, speed and range selection, wear, damage, corrosion, electrical circuits faults)</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</p>
<b>Environmental</b>	<p>Environmental requirements are to include but are not limited to</p>

<b>RANGE STATEMENT</b>	
<b>requirements</b>	waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tools, meters, gauges and load and pressure testing devices
<b>Materials</b>	Materials may include transmission fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of automatic and semi-automatic transmissions and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Transmission
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## AURHTX3003 Repair transmissions - automatic (heavy vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTH307166A Repair transmissions - automatic (heavy vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the repair of automatic and semi-automatic transmissions and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of systems, repair and replacement of and automatic and semi-automatic transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>For repairs to electronic control drive management systems refer to AURETR3044 Service and repair electronic drive management systems.</p> <p>Work involved includes automatic and semi-automatic transmissions in heavy vehicles, agricultural machinery and mobile plant equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to test transmission	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tools, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for testing of transmissions are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with semi automatic, automatic transmissions are observed</p>
2. Test transmission and analyse results	<p>2.1.Methods for system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Road/site test is conducted to identify transmission operational abnormalities</p> <p>2.3.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.4.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.5.Report is processed in accordance with workplace procedures</p>
3. Prepare to repair and replace transmission	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for repair are identified and support equipment is identified and prepared</p>
4. Carry out repair and replacement	<p>4.1.Methods for repair and replacement are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments made during the repair and replacement are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle/equipment for use or	<p>5.1.Repair and replacement schedule documentation is completed</p>

ELEMENT	PERFORMANCE CRITERIA
storage	<p>5.2.Final inspection is made to ensure protective guards, safety features are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations</p> <p>5.4.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with transmissions
- operating principles of automatic and semi automatic transmissions and their relationship to other systems
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- repair and replacement procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting diagnosis results
- conducting repair and replacement of a range of transmissions in accordance with workplace and manufacturer/component supplier requirements
- completing work within workplace timeframes
- vehicle/transmissions presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to carrying out repairs to automatic and semi-automatic transmissions and associated components
- equipment, hand and power tooling appropriate to carrying out repairs to automatic and semi-automatic transmissions and associated components
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Transmissions</b>	Transmissions include automatic and semi automatic transmissions, power shift transmissions
<b>Variables</b>	Other variables may include: <ul style="list-style-type: none"> <li>• transfer case</li> <li>• power take off assemblies</li> <li>• pre-selective transmissions</li> <li>• electronically controlled transmissions</li> </ul>
<b>Testing methods</b>	Methods are to include: <ul style="list-style-type: none"> <li>• operational testing, testing under operating conditions, test bench testing, electrical testing</li> <li>• visual, aural and functional assessment (including fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site

<b>RANGE STATEMENT</b>	
	evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tools, meters, gauges and load and pressure testing devices
<b>Materials</b>	Materials may include transmission fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of automatic and semi-automatic transmissions and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURHTX3004 Diagnose and repair heavy vehicle clutch systems

### Modification History

Release	Comment
Release 1	Replaces AURT306170A Inspect, service and/or repair clutch assemblies and associated operating system components  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair clutch systems fitted to heavy vehicles. It involves diagnosing deviations from correct operation, repair operations of the clutch system and associated components, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the clutch systems of heavy vehicles in the road transport, mining, construction, and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a heavy vehicle clutch system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a heavy vehicle clutch system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a heavy vehicle clutch system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tooling, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation.</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace procedures</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - carry out measurements
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlining causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of heavy vehicle clutch systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- operate diagnostic and test equipment
- use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements, relating to the diagnosing and repairing heavy vehicle clutch systems
- dangers of working with heavy vehicle clutch systems
- application, purpose and operating principles of heavy vehicle clutch systems, including:
  - single-disc clutch assemblies
  - two-disc clutch assemblies
  - coil spring clutches
  - diaphragm spring clutches
- maintenance procedures of heavy vehicle clutch systems
- testing procedures of heavy vehicle clutch systems
- repair procedures of heavy vehicle clutch systems
- post-repair testing procedures of heavy vehicle clutch systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of heavy vehicle clutch systems relative to the qualification being sought
- diagnose and repair heavy vehicle clutch systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with clutch system faults relevant to the qualification being sought
- equipment appropriate for the testing of heavy vehicle clutch systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of heavy vehicle clutch systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of an holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• heavy vehicle clutch systems diagnosis and repair methods, processes and equipment</li> </ul>
<b>Workplace Health and Safety (WHS) requirements</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of heavy vehicle clutch systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• heavy vehicle clutch service requirements and repair manuals.</li> </ul>
<b>Diagnosis tests</b> may include:	<ul style="list-style-type: none"> <li>• component inspection and evaluation.</li> <li>• hydraulic and mechanical systems</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"><li>• clutch slippage</li><li>• clutch drag and binding</li><li>• clutch chatter</li><li>• clutch pedal pulsation</li><li>• clutch vibration</li><li>• clutch system noise.</li></ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"><li>• component repair procedures, including<ul style="list-style-type: none"><li>• removal, replacement and adjustment procedures</li><li>• dismantle, repair, re-assembly and adjustment procedures.</li></ul></li></ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"><li>• mobile or stationary tests to evaluate clutch performance</li></ul>

**Unit Sector(s)**

Not applicable.

**Custom Content Section**

<b>Competency field</b>	Mechanical - Heavy Vehicle
<b>Unit sector</b>	Technical - Transmission

## AURHTX4006 Diagnose complex faults in heavy commercial vehicle transmission and driveline systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in heavy commercial vehicle transmission and driveline systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical, electronic, mechanical or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of transmission and driveline systems of heavy commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1.Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2.Specifications for correctly functioning heavy commercial vehicle transmission and driveline systems are accessed and interpreted</p> <p>1.3.<b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4.Effects of systemic deficiencies or discrepancies or <b>faults</b> in heavy commercial vehicle transmission and driveline systems are identified and confirmed from indirect or direct evidence</p> <p>1.5.Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1.Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2.System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3.Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4.<b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5.Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1.Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2.Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3.Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4.Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5.Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to heavy commercial vehicle transmission and driveline systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of heavy commercial vehicle transmission and driveline systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to heavy commercial vehicle transmission and driveline systems
- concepts, types, functions, operations and limitations of heavy commercial vehicle transmission and driveline systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to heavy commercial vehicle transmission and driveline systems
- testing procedures for heavy commercial vehicle transmission and driveline systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different heavy commercial vehicle transmission and driveline systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex heavy commercial vehicle transmission and driveline systems.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated commercial vehicle

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- transmission and driveline system faults
- tools and equipment appropriate for the diagnosis of complex faults in commercial vehicle transmission and driveline systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults may include:***

- faults with
  - clutches
  - torque converters
  - manual and automatic transmissions
  - drive and power take-off shafts
  - differentials
  - mechatronic modules and multi-class bus systems
  - input sensors
  - output actuators
  - wiring harness
  - computer systems
- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications
- component specifications, component assembly, component damage and system modifications
- mechanical and hydraulic system faults.

***Tests may include:***

- wiring and connector integrity
- operation and specification of input and output devices
- controlling electronic components and computers
- data interpretation and readings related to direct indirect and

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	intermittent causes <ul style="list-style-type: none"> <li>hydraulic systems testing</li> <li>electrical systems testing</li> <li>mechanical systems testing</li> <li>road test.</li> </ul>
<b>Testing equipment</b> may include:	<ul style="list-style-type: none"> <li>analogue and digital multimeters, lab oscilloscopes, scan tools, test lights and test LEDs</li> <li>pulse generators</li> <li>manufacturer and component supplier testing equipment.</li> </ul>
<b>Diagnostic processes</b> may include:	<ul style="list-style-type: none"> <li>analysing manufacturer and component supplier specifications, schematics and operational procedures related to transmission and driveline systems</li> <li>six-step troubleshooting plan</li> <li>discover-investigate-fix methodology</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical – Heavy commercial Vehicle
<b>Unit sector</b>	Technical – Transmission

## Custom Content Section

Not applicable.

## AURHTX5005 Analyse and evaluate heavy vehicle transmission system faults

### Modification History

Release	Comment
Release 1	Replaces AURT571193A Analyse and evaluate heavy vehicle transmission system faults Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to analyse and evaluate heavy vehicle transmission systems in order to initiate action to sustain, vary or enhance performance.
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### Application of the Unit

Application of the unit	It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.  The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning heavy vehicle transmission systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Heavy vehicle transmission system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstances, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary heavy vehicle transmission systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- heavy vehicle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, functions, operations and limitations of heavy vehicle manual transmission systems/components.
- detailed knowledge of the types, function, operations and limitations of heavy vehicle automatic transmission systems/components.
- general knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three heavy vehicle transmission systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for heavy vehicle transmission systems.
- Document and report the diagnostic process and findings and recommended rectification.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, heavy vehicle transmission systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Systems</b>	<ul style="list-style-type: none"> <li>Transmission systems to be covered in this unit are to include both mechanical, automatic and integrated computer controlled systems made up of components, including clutches, torque converters, automatic and manual electric transmissions, gearboxes, differentials, drive shafts and final drives.</li> </ul>
<b>System failures</b>	<ul style="list-style-type: none"> <li>Transmission system failures covered by this unit are to include noises, leaks, air system pressures, contamination, clutch operation, vibrations, hard shifting, abnormal gear wear, loose mountings, lubrication, and operating temperature.</li> <li>Transmission system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Diagnosis</b>	Diagnosis for module and parts replacement in related electrical and electronic control systems are covered.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.

**RANGE STATEMENT**

<b>Testing equipment</b>	Testing equipment is to include pressure gauges, multimeters, inclinometer (electronic) and computerised diagnostic systems.
<b>Tests</b>	Tests to be conducted are to include pressure (oil and air), lubricant sampling, sensor integrity and function, wiring harness integrity.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"><li>• Workplace procedures relating to the use of tooling and equipment.</li><li>• Workplace procedures relating to reporting and communication.</li><li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to heavy vehicle transmission systems.</li><li>• Australian Design Rules.</li><li>• Vehicle industry regulations.</li><li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Heavy Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURHTY2001 Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect and service mechanical connection systems fitted to both the tractive unit and the towed unit of heavy vehicles.</p> <p>The unit involves an inspection of the mechanical connection system to note deviations from correct operation as well as service to ensure the system complies with manufacturer's specifications.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the mechanical connection systems of heavy vehicles in the road transport, mining, construction, agricultural and other industrial environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and service a heavy vehicle mechanical connection system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting and servicing <b>heavy vehicle mechanical connection systems</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect a heavy vehicle mechanical connection system	<p>2.1. Inspection is carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Service a heavy vehicle mechanical connection system	<p>3.1. <b>Service options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Service and adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p>
4. Clean up work area and finalise work processes	<p>4.1. <b>Final inspection</b> is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. <b>Service schedule documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to carry out measurements and perform calculations
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection and servicing of heavy vehicle mechanical connection systems
- technology skills to use technology to collect and provide information.

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- identification, purpose and operating principles of heavy vehicle mechanical connection systems
- inspection procedures of heavy vehicle mechanical connection systems
- service procedures of heavy vehicle mechanical connection systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect and service a range of heavy vehicle mechanical connection systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy commercial vehicles with mechanical connection systems relevant to the qualification being sought
- tools and equipment appropriate for the inspection and servicing of heavy vehicle mechanical connection systems
- specifications and workplace instructions

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• heavy vehicle mechanical connection system inspection and servicing methods, processes and equipment.</li> </ul>
<b><i>Heavy vehicle mechanical connection systems</i></b> may include:	<ul style="list-style-type: none"> <li>• 5<sup>th</sup> wheel systems</li> <li>• king pins</li> <li>• landing gear systems.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection and servicing of heavy vehicle mechanical connection systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>heavy vehicle mechanical connection system service requirements and repair manuals.</li></ul>
<i>Service options</i> may include:	<ul style="list-style-type: none"><li>lubricant application and replacement</li><li>adjustments and operational testing.</li></ul>
<i>Final inspection</i> may include:	<ul style="list-style-type: none"><li>final check of heavy vehicle mechanical connection systems and components</li><li>checking of heavy vehicle mechanical connection system operation during mobile or stationary tests</li><li>cleaning of vehicle and components.</li></ul>
<i>Service schedule documentation</i> may include:	<ul style="list-style-type: none"><li>vehicle service book</li><li>job card or work order</li><li>workplace computerised or written records and invoice.</li></ul>

## Unit Sector(s)

Competency field	Mechanical – Heavy Vehicle
Unit sector	Technical – Chassis and Frame

## Custom Content Section

Not applicable.

## AURHTY3002 Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair mechanical connection systems fitted to both the tractive unit and the towed unit. It involves diagnosing deviations from correct operation, repair operations of the mechanical connection system and associated components, and post-repair testing procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the mechanical connection systems of heavy vehicles in the road transport, mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a heavy vehicle mechanical connection system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a heavy vehicle mechanical connection system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a heavy vehicle mechanical connection system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tooling, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle and trailer is presented ready for use</p> <p>4.2. Tools and equipment are cleaned and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of heavy vehicle mechanical connection systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

## REQUIRED SKILLS AND KNOWLEDGE

### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing heavy vehicle mechanical connection systems
- legislation and regulatory requirements
- dangers of working with heavy vehicle mechanical connection systems
- application, purpose and operating principles of heavy vehicle mechanical connection systems, including:
  - 5th wheel systems
  - king pins
  - landing gear systems
- maintenance procedures of heavy vehicle mechanical connection systems
- testing procedures of heavy vehicle mechanical connection systems
- repair procedures of heavy vehicle mechanical connection systems
- post-repair testing procedures of heavy vehicle mechanical connection systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of heavy vehicle mechanical connection systems
- diagnose and repair heavy vehicle mechanical connection systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with mechanical connection system faults relevant to the qualification being sought
- equipment appropriate for the testing of heavy vehicle

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- mechanical connection systems
- specifications and workplace instructions
  - tools appropriate for the repair, replacement and adjustment of heavy vehicle mechanical connection systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of an holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b>Workplace instructions</b> may include:</p>	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<p><b>Job requirements</b> may include:</p>	<ul style="list-style-type: none"> <li>• mechanical connection systems diagnosis and repair methods, processes and equipment</li> </ul>
<p><b>Workplace health and safety (WHS) requirements:</b></p>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<p><b>Procedures and information</b> may include:</p>	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of heavy vehicle mechanical connections</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• heavy vehicle mechanical connections service requirements and repair manuals.</li> </ul>
<p><b>Diagnostic tests</b> may</p>	<ul style="list-style-type: none"> <li>• checking for slack in the fifth wheel operation, when connected</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	to a trailer <ul style="list-style-type: none"> <li>• inspecting top plate and brackets for cracks</li> <li>• inspecting the fifth wheel and mounting plate welds</li> <li>• use of a lock tester to check fifth wheel operation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• non-engagement of fifth wheel jaws or locks</li> <li>• cracked welds</li> <li>• slackness or movement between mounting components.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including                             <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• correct engagement of fifth wheel jaws or locks</li> <li>• checking of clearances to manufacturers' specifications.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical – Heavy Vehicle
Unit sector	Technical – Chassis and Frame

## Custom Content Section

Not applicable.

## AURHTZ3001 Diagnose and repair heavy vehicle emission control systems

### Modification History

Release	Comment
Release 1	Replaces AURT304666A Repair and replace emission control systems  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair emission control systems fitted to heavy vehicles. It involves diagnosing deviations from correct operation, repair operations of emission control components and associated systems, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the emission control systems of heavy vehicles in the road transport, mining, construction, agricultural and marine environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a heavy vehicle emission control system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. National Environment Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work</p> <p>1.5. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.6. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a heavy vehicle emission control system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a heavy vehicle emission control system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tooling, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are cleaned and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to interpret instruments, gauges and other measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
- identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
    - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of heavy vehicle emission control systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
  - computerised technology
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**REQUIRED SKILLS AND KNOWLEDGE****Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing heavy vehicle emission control systems
- dangers of testing exhaust gases
- legislation and regulatory requirements for heavy vehicle emissions
- identification of motor vehicle emissions and their effects on the environment and health
- application, purpose and operating principles of heavy vehicle emission control systems
- identification of the effects of associated systems on vehicle emissions
- interpretation of technical information, graphic symbols and diagrams
- diagnostic and testing procedures for heavy vehicle emission control systems
- repair procedures for heavy vehicle emission control systems
- post-repair testing procedures of heavy vehicle emission control systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of heavy vehicle emission control systems relative to the qualification being sought
- diagnose and repair heavy vehicle emission control systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with emission control faults relevant to the qualification being sought
- equipment appropriate for the testing of heavy vehicle emission

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

control systems

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of heavy vehicle emission control systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Workplace instructions** may include:

- computer-generated instructions
- verbal instructions
- written instructions.

**Job requirements** may include:

- heavy vehicle emission control system diagnosis and repair methods, processes and equipment.

**Workplace health and safety requirements:**

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

**Procedures and information** may include:

- verbal, written and graphical instructions
- signage
- work schedules, plans and specifications
- work bulletins or memos
- material safety data sheets (MSDS)
- diagrams or sketches
- safe work procedures relating to the repair and replacement of heavy vehicle emission control systems
- regulatory and legislative requirements relating to the automotive industry
- National Environment Protection Measure for Diesel Vehicles (Guidelines)
- Australian Design Rules
- Engineer's design specifications and instructions
- organisational work specifications and requirements
- instructions issued by authorised workplace or external persons
- Australian standards
- heavy vehicle service requirements and repair manuals.

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Diagnostic tests</i></b> may include:	<ul style="list-style-type: none"> <li>• visual inspection of emission control system components</li> <li>• evaporative emission control</li> <li>• crankcase ventilation</li> <li>• exhaust gas recirculation</li> <li>• diesel exhaust fluid</li> <li>• catalytic converters</li> <li>• diesel particulate filters.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• rough running</li> <li>• poor performance</li> <li>• excessive fuel consumption</li> <li>• excessive emissions (particulates, hydrocarbons, carbon monoxide, oxides of nitrogen)</li> <li>• excessive oil consumption.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• exhaust gas colour assessment</li> <li>• exhaust gas composition analysis</li> <li>• on-board diagnostic system assessment procedures.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Heavy Vehicle
<b>Unit sector</b>	Technical – Emission and Exhaust

**Custom Content Section**

Not applicable.

## AURJTA1001 Perform minor adjustments to motorcycles

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to carry out minor adjustments to motorcycle components and equipment.</p> <p>The unit involves identifying motorcycle components and adjustment requirements, including the use of specialist tools to perform minor adjustments to motorcycles to ensure safe and efficient operation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the minor adjustments of motorcycles in the motorcycle retail, service and repair environment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to adjusting <b>motorcycles</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are identified and applied</p> <p>1.3. Work areas are cleared to allow set-up and activities to take place according to workplace policies and procedures</p>
2. Inspect motorcycle and determine work requirement	<p>2.1. Inspection is carried out to determine adjustment requirements according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Inspection findings are reported according to workplace procedures, including recommendations for necessary <b>minor adjustments</b></p>
3. Perform minor adjustments	<p>3.1. Adjustment options are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. <b>Appropriate tools</b>, techniques and materials are selected and prepared</p> <p>3.3. Adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>3.4. Post-adjustment testing is carried out to ensure safe and correct operation of the motorcycle</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and motorcycle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. <b>Documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- literacy skills:
  - reading skills to the level required to understand information relating to work orders, including common industry terminology, work plans and safety procedures
  - writing skills to prepare reports and interpret technical information and specifications
- numeracy skills to correctly interpret metric and non-metric systems of measurement
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities which implement and follow standard workplace procedures
- problem-solving skills to:
  - identify technical and procedural problems
  - refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - locate and identify appropriate tools and equipment
  - recognise limitations and seek timely advice
  - follow basic workplace documentation, such as maintenance procedures
- teamwork skills to:
  - work with others and in a team by cooperating with team members
- technical skills to:
  - apply technical information related to motorcycle componentry and maintenance procedures
  - select and use appropriate tools and equipment
- technology skills to:
  - use workplace technology to assist with work practices

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- motorcycle terminology
- methods of sourcing information relevant to adjusting motorcycles
- motorcycle inspection procedures
- motorcycle adjustment procedures, including the use of tools and equipment
- motorcycle post-adjustment testing procedures



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- perform a range of adjustment tasks on a minimum of three different motorcycles with real or simulated adjustment requirements according to workplace, manufacturer and component supplier requirements
- complete workplace documentation
- present motorcycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available:

- workplace location or simulated workplace
- motorcycles and motorcycle components
- equipment, hand and power tools and specialised repair tools and equipment appropriate to adjusting motorcycle
- specifications and workplace instructions.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle inspection and adjustment methods, processes and equipment.</li> </ul>
<b>Motorcycles</b> may include:	<ul style="list-style-type: none"> <li>• road and touring</li> <li>• enduro</li> <li>• agricultural</li> <li>• motocross</li> <li>• trials</li> <li>• scooters and mopeds</li> <li>• 2 stroke and 4 stroke.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Minor adjustments</b> may include:	<ul style="list-style-type: none"> <li>• brakes</li> <li>• clutch</li> <li>• suspension and steering</li> <li>• engine, attachments and controls</li> <li>• chain tension</li> <li>• foot controls</li> <li>• handlebars and controls</li> <li>• accessories.</li> </ul>
<b>Appropriate tools</b> may include	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• hand, power and air tools</li> <li>• specialised motorcycle repair tools</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• floor stands, workbench.</li></ul>
<i>Documentation</i> may include:	<ul style="list-style-type: none"><li>• warranty information</li><li>• job card or work order</li><li>• workplace computerised or written customer records and invoice.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical - Motorcycle
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURJTA1002 Remove and replace motorcycle components and accessories

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to remove, replace and make final adjustments to components and accessories fitted to motorcycles.</p> <p>This unit involves demonstrating the ability to interpret equipment specifications and use tools and equipment to remove, fit and adjust motorcycle components and accessories to Australian Standards and customer requirements.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to components, ancillary equipment and accessories of motorcycles and motor scooters, including road, off-road, agricultural and race applications.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to removing and replacing motorcycle components and accessories</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. <b>Tools and equipment</b> required for the task are selected and prepared</p>
2. Remove and inspect motorcycle components or accessories	<p>2.1. <b>Components or accessories</b> for removal are identified</p> <p>2.2. Removal of component is carried according to manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.3. Inspection is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>2.4. <b>Workplace documentation</b> is completed according to workplace procedures</p>
3. Fit, test and adjust motorcycle components	<p>3.1. Components or accessories for fitting are identified</p> <p>3.2. Fitting is implemented according to manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>3.3. Adjustments are made to components or accessories according to manufacturer and component supplier specifications</p> <p>3.4. Post-fitting testing is performed to ensure integrity of work carried out</p> <p>3.5. Further adjustments are made where necessary on conclusion of testing</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and motorcycle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - communicate effectively regarding work requirements with supervisor or other workers
  - report work outcomes and problems
- literacy skills:
  - reading skills to the level required to understand information related to work orders, including common industry terminology, work plans and safety procedures
  - writing skills to prepare reports and interpret technical information and specifications
- numeracy skills to: correctly interpret metric and imperial systems of measurement
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities which implement and follow standard workplace procedures
- problem-solving skills to:
  - identify technical and procedural problems
  - refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - locate and identify appropriate tools and equipment
  - recognise limitations and seek timely advice
  - follow basic workplace documentation, such as work plans or procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to:
  - select tools and equipment appropriate to the task
  - use tools and equipment to perform minor adjustments to motorcycle components and accessories
- technology skills to use workplace technology to assist with work practices

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to removing and replacing motorcycle components and accessories
- motorcycle terminology
- types, function, application and operation of tools and equipment used for removing and replacing motorcycle components and accessories
- removal and replacement procedures of motorcycle components and accessories
- testing procedures and adjustment methods relating to motorcycle component and accessory removal and replacement

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- workplace documentation policies and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select removal, replacement, inspection and adjustment methods and techniques appropriate to the circumstances
- conduct a minimum of three different removal, replacement and adjustment tasks according to manufacturer and component supplier specifications
- confirm effectiveness of work relating to component or accessory removal or replacement
- complete workplace documentation requirements relevant to tasks performed.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available:

- operational motorcycles and a range of suitable components or accessories
- equipment, hand and power tools and specialised motorcycle tools and equipment appropriate for the removal and replacement of motorcycle components and accessories

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle component and accessory removal and replacement methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• job card or work schedule</li> <li>• written maintenance procedures</li> <li>• workshop manuals</li> <li>• work bulletins</li> <li>• verbal or written and graphical instructions</li> <li>• product assembly instructions</li> <li>• service instructions</li> <li>• manufacturers design specifications and maintenance instructions.</li> </ul>
<b>Tools and equipment</b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• hand-held power tools and air tools</li> <li>• specialised motorcycle repair tools</li> <li>• floor stands</li> <li>• workbench.</li> </ul>
<b>Components or accessories</b> may include:	<ul style="list-style-type: none"> <li>• wheels</li> <li>• mudguards</li> <li>• lighting system components</li> <li>• suspension system components</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• brake system components</li><li>• fuel and oil tanks</li><li>• seat</li><li>• control cables</li><li>• ignition system components</li><li>• handlebars and hand controls</li><li>• foot controls and foot-pegs</li><li>• mufflers and exhaust pipes</li><li>• windshield</li><li>• pannier bags</li><li>• luggage racks.</li></ul>
<b>Workplace documentation</b> may include:	<ul style="list-style-type: none"><li>• safety and emergency procedures</li><li>• reporting and recording procedures</li><li>• organisational quality policies and procedures</li><li>• material safety data sheets (MSDS)</li><li>• regulatory and legislative requirements pertaining to motorcycle safety</li><li>• organisation work instructions and requirements</li><li>• Australian standards.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical - Motorcycle
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURJTA5003 Analyse and evaluate motorcycle engine and transmission system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT573193A Analyse and evaluate motorcycle engine and transmission system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate motorcycle engine and transmission systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p> <p>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning motorcycle engine and transmission systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Motorcycle engine and transmission system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary motorcycle engine and transmission systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- motorcycle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetics and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the types, functions, operations and limitations of motorcycle engines and transmission systems.
- detailed knowledge of the types, function, operations and limitations of motorcycle fuel systems/components.
- detailed knowledge of the types, function, operations and limitations of motorcycle ignition systems/components.
- detailed knowledge of the types, function, operations and limitations of motorcycle intake systems/components.
- detailed knowledge of the types, function, operations and limitations of motorcycle exhaust systems/components.

## REQUIRED SKILLS AND KNOWLEDGE

- detailed knowledge of the types, function, operations and limitations of motorcycle lubrication systems/components.
- detailed knowledge of the types, function, operations and limitations of motorcycle cooling systems/components.
- detailed knowledge of the types, function, operations and limitations of motorcycle engine and transmission mounting systems/components.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of automotive digital computing systems.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three motorcycle engine and transmission systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for motorcycle engine and transmission systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, motorcycle engine and transmission systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

## EVIDENCE GUIDE

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Motorcycles</b>	Motorcycles are to include two-wheel, four-wheel and two-wheel fitted with sidecar.
<b>Motorcycle engine systems</b>	Motorcycle engine systems are to include two-stroke, four-stroke petrol single and multi-cylinder.
<b>Total engine systems</b>	Total engine systems to be covered in this unit are to include the engine and related fuel, ignition, intake, exhaust, lubrication and cooling systems.
<b>Motorcycle engine system failures</b>	Motorcycle engine system failures covered by this unit are to include engine (poor performance, excessive oil consumption, engine stoppages), fuel (contamination, flow, pressure, leakage), ignition (no-start, no-run, misfire, erratic operation, lack of power, charging), intake (leakage, noise, vibration, inadequate control, exhaust (noise, pressure, abnormal emissions, blockages, lubrication (pressure, flow, leakage, abnormal engine wear, inadequate filtration, sludge formation, excessive deposits, overheating, cooling (overcooling, insufficient cooler flow, coolant out of specification, lack of air flow, internal corrosion), mounting (noise, vibration, hardness, clutch shudder, erratic transmission control).
<b>Transmission systems</b>	Transmission systems to be covered by this unit are to include mechanical with variable ratio or constant mesh and chain drive, belt drive and gear drive.
<b>Transmission system failures</b>	Transmission system failures covered by this unit are to include abnormal component wear, clutch operations, clutch pack slippage, chain or belt drive slippage, incorrect belt/chain adjustments, contamination, driveline phasing and alignment, hard shifting, leaks, loose mountings, lubrication, noises, operating temperature, rear wheel locking, vibrations.

<b>RANGE STATEMENT</b>	
<b>Engine and transmission system failures</b>	Engine and transmission system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.
<b>WHS</b>	WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.
<b>Legislative requirements</b>	Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include bore gauges, compression gauges, computer-based diagnostic system, cooling system analyser, crank case pressure tester (2-stroke), dial gauges, exhaust gas analysers, feeler gauges, micrometers, multimeter, oscilloscope, pressure gauges, spring compression testers, stethoscope, tachometer, telescopic gauges, temperature gauges, tension gauges, timing lights, torque gauges, vacuum gauges and verniers, and may include anemometer, barometer, hygrometer, specific gravity gauge and internet/satellite based diagnostics.
<b>Tests</b>	Tests to be conducted are to include component wear analysis, compression, cylinder leakage, engine performance, exhaust gas sampling, flow, lubricant sampling, oil consumption, pressure, sample collection/processing, sensor integrity and function, specific gravity, temperature, transmission clutch slippage, vacuum and wiring harness integrity.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> </ul>

## RANGE STATEMENT

	<ul style="list-style-type: none"> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to motorcycle engine and transmission systems.</li> <li>• Australian Design Rules.</li> <li>• Motorcycle industry legislation/regulations.</li> <li>• Motorcycle industry publications related to emerging engine and transmission system technology and technology changes.</li> </ul>
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## Unit Sector(s)

Unit sector	Mechanical - Motorcycle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURJTB3001 Diagnose and repair motorcycle braking systems

### Modification History

Release	Comment
Release 1	Replaces AURT310166A - Repair hydraulic braking systems Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair braking systems fitted to motorcycles. It involves diagnosing deviations from correct operation, repairing braking system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the braking systems of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a motorcycle braking system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a motorcycle braking system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a motorcycle braking system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of motorcycle braking systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

- operate diagnostic and test equipment
- use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing motorcycle braking systems
- dangers of working with motorcycle braking systems
- operating principles of motorcycle braking systems
- application, purpose and operation of motorcycle braking systems, including:
  - drum brake systems
  - disc brake systems
- testing procedures for motorcycle braking systems
- repair procedures for motorcycle braking systems
- post-repair testing procedures for motorcycle braking systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of motorcycle braking systems, including motorcycle disc brake and drum brake systems
- diagnose and repair motorcycle braking systems according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles with braking system faults relevant to the qualification being sought
- equipment appropriate for the testing of motorcycle braking systems

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of motorcycle braking systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• motorcycle braking system diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul> </li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of motorcycle braking systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<b><i>Diagnosis tests</i></b> may include:	<ul style="list-style-type: none"> <li>• visual inspection of braking system components</li> <li>• measurement of linkage and actuator adjustments</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• disc rotor thickness, parallelism and run-out measurements</li> <li>• brake drum diameter, out-of-round, and bell-mouthing measurements</li> <li>• brake fluid evaluation</li> <li>• isolation of faults.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• poor braking performance</li> <li>• braking system leaks</li> <li>• dragging brakes</li> <li>• excessive braking lever travel</li> <li>• abnormal braking system noise or smell.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including:</li> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• mobile or stationary tests to evaluate braking system performance.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Motorcycle
<b>Unit sector</b>	Technical – Brakes

**Custom Content Section**

Not applicable.

## AURJTB5002 Analyse and evaluate motorcycle braking system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT573393A Analyse and evaluate motorcycle braking system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate motorcycle braking systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning motorcycle braking systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Motorcycle braking system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary motorcycle braking systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- motorcycle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetics and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, functions and limitations of friction materials associated with motorcycle braking systems.
- detailed knowledge of the types, function, operations and limitations of motorcycle mechanical braking systems/ components.
- detailed knowledge of the types, function, operations and limitations of motorcycle hydraulic braking systems/ components.
- detailed knowledge of the types, function, operations and limitations of motorcycle abs braking systems/ components.
- detailed knowledge of the influence of equipment trailing on motorcycle braking systems.
- general knowledge of the Australian design rules requirements related to motorcycle braking

**REQUIRED SKILLS AND KNOWLEDGE**

systems.

- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of automotive digital computing systems.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three motorcycle braking systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for motorcycle braking systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, motorcycle braking systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters, or to enhance system performance.
<b>Motorcycles</b>	Motorcycles are to include two-wheel, four-wheel and two-wheel fitted with sidecar.
<b>Braking systems</b>	Braking systems to be covered in this unit are to include mechanical, hydraulic and ABS systems.
<b>Braking system failures</b>	<ul style="list-style-type: none"> <li>Braking system failures covered by this unit are to include application and release times, brake balance, brake drum wear, calibration/adjustment specifications, component damage, conductors - piping specifications, contamination, fluids out of specification, friction material abnormalities, leaks, overheating, system pressures.</li> <li>Braking system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.

**RANGE STATEMENT**

<b>Testing equipment</b>	Testing equipment is to include air gauges, computer-based diagnostic systems, dynamometer, micrometers, multimeter, pressure gauges, temperature gauges, verniers and may include brake timer and electronic stethoscope.
<b>Tests</b>	Tests to be conducted are to include accumulator pressure, disc stack height, pressure, system performance (distance/balance), sensor/actuator and wiring harness integrity, sampling (collection and processing, wear analysis (drum/disc/lining material) and monitoring/analysis of computer-based diagnostic systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to motorcycle braking systems.</li> <li>• Australian Design Rules.</li> <li>• Motorcycle industry regulations.</li> <li>• Motorcycle industry publications related to emerging braking system technology and technology changes.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Motorcycle
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURJTD2001 Inspect and service motorcycle suspension systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect and service suspension systems fitted to motorcycles.</p> <p>The unit involves an inspection of the suspension system to note deviations from correct operation as well as service to ensure the system complies with manufacturer's specifications.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the front and rear suspension systems of motorcycles and motor scooters, including road, off-road, agricultural and race applications.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and service motorcycle suspension system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting and servicing <b>motorcycle suspension systems</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect motorcycle suspension system	<p>2.1. Inspection is carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Service motorcycle suspension system	<p>3.1. <b>Service options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Service and adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p>
4. Clean up work area and finalise work processes	<p>4.1. <b>Final inspection</b> is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. <b>Service schedule documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to perform simple measurements
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection and servicing of motorcycle suspension systems
- technology skills to use technology to collect and provide information.

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- operating principles of motorcycle suspension systems
- methods of sourcing information relevant to inspecting and servicing motorcycle suspension systems
- inspection procedures for motorcycle suspension systems, including:
  - front and rear suspension systems
- service procedures for motorcycle suspension systems, including:
  - front and rear suspension systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect and service a range of motorcycle suspension systems, including front suspension systems and components and rear suspension systems and shock absorbers according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles relevant to the qualification being sought
- tools and equipment appropriate for the inspection and servicing of motorcycle suspension systems
- specifications and workplace instructions.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle suspension system inspection and service methods, processes and equipment.</li> </ul>
<b>Motorcycle suspension systems</b> may include:	<ul style="list-style-type: none"> <li>• telescopic fork suspension</li> <li>• inverted telescopic fork suspension</li> <li>• front telelever and duolever</li> <li>• rear swing arm suspension (twin-sided, monoshock and paralever)</li> <li>• shock absorbers.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection and servicing of motorcycle suspension systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<i>Service options</i> may include:	<ul style="list-style-type: none"> <li>• fluid replacement</li> <li>• adjustments and operational testing.</li> </ul>
<i>Final inspection</i> may include:	<ul style="list-style-type: none"> <li>• final check of suspension systems and components</li> <li>• checking of suspension system operation during mobile or stationary tests</li> <li>• cleaning of motorcycle.</li> </ul>
<i>Service schedule documentation</i> may include:	<ul style="list-style-type: none"> <li>• motorcycle service book</li> <li>• job card or work order</li> <li>• workplace computerised or written customer records and invoice.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical - Motorcycles
<b>Unit sector</b>	Technical – Steering and Suspension

**Custom Content Section**

Not applicable.

## AURJTD2002 Inspect and service motorcycle steering systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect and service steering systems fitted to motorcycles.</p> <p>The unit involves an inspection of the steering system to note deviations from correct operation as well as service to ensure the system complies with manufacturer's specifications.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the steering systems of motorcycles and motor scooters, including road, off-road, agricultural and race applications.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and service motorcycle steering systems	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting and servicing motorcycle steering systems</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect motorcycle steering system	<p>2.1. Inspection is carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Service motorcycle steering system	<p>3.1. <b>Service options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Service and adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p>
4. Clean up work area and finalise work processes	<p>4.1. <b>Final inspection</b> is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. <b>Service schedule documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to perform simple measurements
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection and servicing of motorcycle steering systems
- technology skills to use technology to collect and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- operating principles of motorcycle steering systems
- methods of sourcing information relevant to inspecting and servicing motorcycle steering systems
- inspection procedures for motorcycle steering systems
- service procedures for motorcycle steering systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect and service a range of motorcycle steering systems according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian Standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles relevant to the qualification being sought
- tools and equipment appropriate for the inspection and servicing of motorcycle steering systems
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• motorcycle steering system and component inspection and service methods, processes and equipment</li> </ul>
<b><i>Motorcycle steering systems</i></b> may include:	<ul style="list-style-type: none"> <li>• telescopic forks / fork legs</li> <li>• wheel and axle assembly</li> <li>• triple clamps</li> <li>• handlebars, clamps and controls</li> <li>• headstock and bearings</li> <li>• steering stops</li> <li>• steering dampers.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection and servicing of motorcycle steering systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<i>Service options</i> may include:	<ul style="list-style-type: none"> <li>• fluid replacement</li> <li>• adjustments and operational testing.</li> </ul>
<i>Final inspection</i> may include:	<ul style="list-style-type: none"> <li>• final check of steering systems and components</li> <li>• checking of steering system operation during mobile or stationary tests</li> <li>• cleaning of motorcycle.</li> </ul>
<i>Service schedule documentation</i> may include:	<ul style="list-style-type: none"> <li>• motorcycle service book</li> <li>• job card or work order</li> <li>• workplace computerised or written customer records and invoice.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical - Motorcycles
<b>Unit sector</b>	Technical – Steering and Steering

**Custom Content Section**

Not applicable.

## AURJTD3003 Diagnose and repair motorcycle suspension systems

### Modification History

Release	Comment
Release 1	Replaces AURTM316166A Repair suspension systems (motorcycle)  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern motorcycle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair suspension systems fitted to motorcycles. It involves diagnosing deviations from correct operation, repairing suspension system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the suspension systems of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a motorcycle suspension system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> relating to <b>motorcycle suspension systems</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a motorcycle suspension system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a motorcycle suspension system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
This section describes the skills and knowledge required for this unit.
<b>Required skills</b>

## REQUIRED SKILLS AND KNOWLEDGE

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - measure and calculate length, area and volume
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - plan own work requirements, setting own work program and managing time to ensure tasks are finished on time
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to:
  - identify and describe own role and role of others
  - work within a team
  - work with diverse individuals and groups
  - apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools related to the repair of motorcycle suspension systems, including the use of:
  - specialist tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE****Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing motorcycle suspension systems
- dangers of working with motorcycle suspension systems
- operating principles of motorcycle suspension systems
- application, purpose and operation of motorcycle suspension systems
- testing procedures for motorcycle suspension systems
- repair procedures for motorcycle suspension systems, including:
  - front fork cartridge removal and replacement procedures, including seal replacement, oil replacement and air purging
  - front fork slider bushes replacement procedures
  - rear shock absorber removal and replacement procedures
  - rear shock absorber dismantle and repair procedures
  - steering damper assembly repair procedures
- post-repair testing procedures for motorcycle suspension systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of motorcycle suspension systems including:
  - front fork cartridge removal and replacement, including seal replacement, oil replacement and air purging
  - rear shock absorber removal and replacement
  - diagnosis and repair motorcycle suspension systems according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition the complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- motorcycles with suspension system faults relevant to the qualification being sought
- equipment appropriate for the testing of motorcycle suspension systems
- motorcycle specifications and workplace instructions
- tooling appropriate for the repair, replacement and adjustment of motorcycle suspension systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle suspension system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the diagnosis and repair of motorcycle suspension systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<b>Motorcycle suspension systems</b> may include:	<ul style="list-style-type: none"> <li>• telescopic fork suspension</li> <li>• inverted telescopic fork suspension</li> <li>• front telelever and duolever</li> <li>• rear swing arm suspension (twin-sided, monoshock and paralever).</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Diagnosis tests</i></b> may include:	<ul style="list-style-type: none"> <li>• visual inspection of suspension system components</li> <li>• evaluation of suspension during mobile or stationary tests</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Fault(s)</i></b> may include:	<ul style="list-style-type: none"> <li>• lack of front or rear suspension rebound damping</li> <li>• excessive front or rear suspension rebound damping</li> <li>• lack of front or rear suspension compression damping</li> <li>• excessive front or rear suspension compression damping.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• mobile or stationary tests to evaluate suspension system performance</li> <li>• bounce-test to ensure air has been purged from front fork assembly.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical – Motorcycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical – Steering and Suspension
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## AURJTD3004 Diagnose and repair motorcycle steering systems

### Modification History

Release	Comment
Release 1	Replaces AURTM315166A Repair steering systems (motorcycle) Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern motorcycle technologies
Release 2	Minor typographical errors corrected

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair steering systems fitted to motorcycles. It involves diagnosing deviations from correct operation, repairing steering system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the steering systems of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a motorcycle steering system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to <b>motorcycle steering systems</b> diagnosis and repair</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a motorcycle steering system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a motorcycle steering system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace technology and tools relating to the repair of motorcycle steering systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- operate diagnostic and test equipment
- use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements
- operating principles of motorcycle steering systems
- application, purpose and operation of motorcycle steering systems
- testing procedures of motorcycle steering systems
- repair procedures of motorcycle steering systems, including:
  - triple – clamp fork alignment procedures
  - front axle aligning procedures
- post-repair testing procedures of motorcycle steering systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of motorcycle steering systems including headstem bearing removal, replacement and bearing preload adjustment
- diagnose and repair motorcycle steering systems according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- a motorcycle or motorcycles with steering system faults relevant to the qualification being sought
- equipment appropriate for the testing of motorcycle steering

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

systems

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of motorcycle steering systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of an holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle steering system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Motorcycle steering systems</b> may include:	<ul style="list-style-type: none"> <li>• triple-clamp steering</li> <li>• hub-centre steering.</li> </ul>
<b>Workplace health and safety requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of motorcycle steering systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>motorcycle service requirements and repair manuals.</li> </ul>
<b><i>Diagnosis tests</i></b> may include:	<ul style="list-style-type: none"> <li>visual inspection of steering system components</li> <li>evaluation of steering during mobile or stationary tests</li> <li>isolation of fault(s).</li> </ul>
<b><i>Fault(s)</i></b> may include:	<ul style="list-style-type: none"> <li>tight steering</li> <li>loose steering</li> <li>notchy steering</li> <li>incorrect steering alignment.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>component repair procedures, including               <ul style="list-style-type: none"> <li>removal, replacement and adjustment procedures</li> <li>dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>mobile or stationary tests to evaluate steering system performance.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Motorcycle
<b>Unit sector</b>	Technical – Steering and suspension

**Custom Content Section**

Not applicable.

## AURJTD4005 Diagnose complex faults in motorcycle steering and suspension systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in motorcycle steering and suspension systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic, hydraulic or pneumatic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of steering and suspension systems of motorcycles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning motorcycle steering and suspension systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in motorcycle steering and suspension systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to motorcycle steering and suspension systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of motorcycle steering and suspension systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to motorcycle steering and suspension systems
- types, functions, operations and limitations of motorcycle steering and suspension systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to motorcycle steering and suspension systems
- testing procedures of motorcycle steering and suspension systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different motorcycle steering and suspension systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in motorcycle steering and suspension systems.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated motorcycle steering and

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

suspension systems faults

- tools and equipment appropriate for the diagnosis of complex faults in motorcycle steering and suspension systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i> may include:</b>	<ul style="list-style-type: none"> <li>• indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations</li> <li>• direct faults in input sensors, output actuators, wiring harness, computer systems</li> <li>• component damage and system modifications.</li> </ul>
<b><i>Tests</i> may include:</b>	<ul style="list-style-type: none"> <li>• wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes</li> <li>• use of a shock absorber dynamometer</li> <li>• on-road testing</li> <li>• component test.</li> </ul>
<b><i>Testing equipment</i> may include:</b>	<ul style="list-style-type: none"> <li>• shock absorber dynamometer</li> <li>• analogue and digital multimeters, lab oscilloscopes, scan tools, test lights and test LEDs</li> <li>• pulse generators</li> <li>• manufacturer/component supplier testing equipment.</li> </ul>
<b><i>Diagnostic processes</i> may include:</b>	<ul style="list-style-type: none"> <li>• analysing manufacturer/component supplier specifications, schematics and operational procedures related to motorcycle steering and suspension systems</li> <li>• six-step troubleshooting plan</li> <li>• discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical – Motorcycle
<b>Unit sector</b>	Technical – Steering and Suspension

## Custom Content Section

Not applicable.

## AURJTD5006 Analyse and evaluate motorcycle steering, suspension and frame system faults

### Modification History

Release	Comment
Release 1	Replaces AURT573093A Analyse and evaluate motorcycle steering, suspension and frame system faults  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to analyse and evaluate motorcycle steering, suspension and frame systems in order to initiate action to sustain, vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.  The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning motorcycle steering and suspension frame systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Motorcycle steering, suspension and frame system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4.Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary motorcycle steering, suspension and frame systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- motorcycle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- steering system theory, including steering angles.
- the functions of hydraulic pressure within steering and suspension systems.
- working knowledge of the types, applications and limitations of tyres used on motorcycles.
- detailed knowledge of the types, applications and limitations of materials used in motorcycle frames.
- detailed knowledge of the types, function, operations and limitations of motorcycle steering systems/components.
- detailed knowledge of the types, function, operations and limitations of motorcycle suspension systems/components.
- detailed knowledge of the types and influences of leading and trailing link suspension on motorcycle performance.

## REQUIRED SKILLS AND KNOWLEDGE

- general knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three motorcycle steering, suspension and frame systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for motorcycle steering, suspension and frame systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, motorcycle steering, suspension and frame systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

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## EVIDENCE GUIDE

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Motorcycles</b>	Motorcycles are to include two-wheel, four-wheel and two-wheel fitted with sidecar.
<b>Steering and suspension systems</b>	Steering and suspension systems to be covered in this unit are to include steering, telescopic forks and leading and trailing link suspension.
<b>Frames</b>	Frames are to include tubular frame and alloy formed section.
<b>Steering and suspension failures</b>	Steering and suspension failures covered by this unit are to include alignment, control systems, emergency systems, frame out of specification, tyre wear, incorrect tyres, wheel balance, vibration, directional stability, calibration/ adjustment specifications, loss of oil, contamination, lubrication out of specification, loss of gas pressure, component specifications, abnormal component wear, component assembly, component damage (forks, frame, swinging arm, bearings, faulty valves, damaged/faulty springs and system modifications.
<b>Steering, suspension and frame system failures</b>	Steering, suspension and frame system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include callipers, dial indicator, flow meters, fork/oil and rear suspension gas filler kits, handle bar gauge, plumb line, pressure gauges, protractors, squares, static and dynamic wheel balancer, straight edges, string line, tape measures, theodolite, tyre pressure gauges and verniers, and may include laser and light alignment equipment.
<b>Tests</b>	Tests to be conducted are to include tyre pressures, tyre tread, toe-in, toe-out, system pressures, frame alignment, ride height and wheel bearing specifications.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to motorcycle steering, suspension and frame systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Motorcycle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURJTE3001 Diagnose and repair motorcycle engines

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair engines fitted to motorcycles. It involves diagnosing deviations from correct operation, repairing engine components and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the engines of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a motorcycle engine	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a motorcycle engine	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a motorcycle engine	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - measure and calculate length, area and volume
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to work within a team
- technical skills to use workplace tools relating to the repair of motorcycle engines, including the use of:
  - specialised tooling and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements
- operating principles of motorcycle engines
- application, purpose and operation of motorcycle engines, including:
  - air-cooled engines
  - liquid-cooled engines
  - two-stroke engines
  - four-stroke engines
- testing procedures of motorcycle engines
- repair procedures of motorcycle engines
- post-repair testing procedures of motorcycle engines

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of motorcycle engines
- diagnose and repair motorcycle engines according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles with engine faults relevant to the qualification being sought
- equipment appropriate for the testing of motorcycle engines
- specifications and workplace instructions

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- tools appropriate for the repair, replacement and adjustment of motorcycle engines.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle engine diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of motorcycle engines</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<b>Diagnostic tests</b> may	<ul style="list-style-type: none"> <li>• evaluation of abnormal noises</li> <li>• engine compression tests</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• cylinder leakage tests</li> <li>• oil pressure tests</li> <li>• visual inspection of engine and components</li> <li>• measurement of engine component wear</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• abnormal engine noise or operation</li> <li>• loss of power</li> <li>• engine component wear</li> <li>• engine leaks.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• mobile or stationary tests to evaluate engine performance.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Motorcycle
<b>Unit sector</b>	Technical - Engines

**Custom Content Section**

Not applicable.

## AURJTE4002 Diagnose complex faults in motorcycle engine and transmission systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in motorcycle engine and transmission systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to system fault and failure diagnosis of engine and transmission systems of motorcycles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning motorcycle engine and transmission systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in motorcycle engine and transmission systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to motorcycle engine and transmission systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of motorcycle engine and transmission systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of motorcycle engine and transmission systems
- types, functions, operations and limitations of motorcycle engine and transmission systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to motorcycle engine and transmission systems
- testing procedures of motorcycle engine and transmission systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• interpret workplace instructions and locate and apply information</li> <li>• apply safety requirements, including the use of personal protective equipment</li> <li>• identify and select appropriate diagnosis processes to be performed</li> <li>• complete diagnosis of complex faults on a minimum of three different motorcycle engine and transmission systems with real or simulated faults</li> <li>• document and report outcomes and required actions of diagnosis of complex faults in motorcycle engine and transmission systems.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• motorcycles with real or simulated engine and transmission</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

system faults

- tools and equipment appropriate for the diagnosis of complex faults in motorcycle engine and transmission systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i> may include:</b>	<ul style="list-style-type: none"> <li>• indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations</li> <li>• direct faults in input sensors, output actuators, wiring harness, computer systems</li> <li>• component damage and system modifications.</li> </ul>
<b><i>Tests</i> may include:</b>	<ul style="list-style-type: none"> <li>• wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes</li> <li>• on-road testing</li> <li>• component test.</li> </ul>
<b><i>Testing equipment</i> may include:</b>	<ul style="list-style-type: none"> <li>• analogue and digital multimeters, lab oscilloscopes, scan tools, test lights and test LEDs</li> <li>• pulse generators</li> <li>• manufacturer/component supplier testing equipment.</li> </ul>
<b><i>Diagnostic processes</i> may include:</b>	<ul style="list-style-type: none"> <li>• analysing manufacturer/component supplier specifications, schematics and operational procedures related to motorcycle engine and transmission systems</li> <li>• six-step troubleshooting plan</li> <li>• discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical – Motorcycle
Unit sector	Technical – Engines and Transmissions

## Custom Content Section

Not applicable.

## AURJTJ2001 Remove, inspect and fit motorcycle wheel assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to remove, inspect and fit wheel assemblies fitted to motorcycles. It involves diagnosing deviations from correct operation, removal, inspection and fitting procedures of wheel assemblies.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the wheel assemblies of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove wheel assembly	<p>1.1. <i>Workplace instructions</i> are used to determine job requirements for the removal of <i>motorcycle wheel assemblies</i></p> <p>1.2. <i>Workplace health and safety (WHS) requirements</i> are observed and applied throughout the work</p> <p>1.3. <i>Procedures and information</i> are sourced and interpreted</p> <p>1.4. <i>Removal options</i> are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate tools and equipment are selected and prepared</p>
2. Remove and inspect wheel assembly	<p>2.1. Wheel assembly is removed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <i>Inspection of wheel assembly</i>, mounting points and fittings for damage and wear is carried out</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Fit wheel assembly	<p>3.1. Information required for fitting, adjustment and refitting of wheel assemblies is accessed from manufacturer and component supplier specifications and correctly interpreted</p> <p>3.2. Wheel fitting and <i>adjustments</i> are carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Wheel operation is checked for correct assembly, run-out and alignment according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. Systems affected by wheel removal and refitting are checked for correct operation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow oral instructions
  - ask questions to clarify instructions or procedures
  - report inspection results
- learning skills to identify sources of information and assistance
- literacy skills to:
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - document repairs and parts required
  - complete job card
- numeracy skills to:
  - interpret gauges and instruments
  - interpret numerical information printed on tyres
- planning and organising skills to plan own work requirements and prioritise actions to achieve required outcomes
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to:
  - use workplace technology and tools related to the removal, refitting and adjustment of motorcycle wheel assemblies, including the use of specialist tooling and equipment, measuring equipment and computerised technology

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to motorcycle tyres and tubes
- lifting and supporting procedures for motorcycles
- wheel and rim types and applications
- motorcycle drive types and applications
- wheel removal, inspection, refitting and adjusting procedures
- post-fitting procedures and checks

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- remove, inspect and fit a range of motorcycle wheel assemblies according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycle wheel assemblies
- equipment appropriate for the removal, inspection, fitting and adjustment of motorcycle wheel assemblies
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Motorcycle wheel assemblies</b> may include:	<ul style="list-style-type: none"> <li>• spoked wheels</li> <li>• composite type wheels</li> <li>• one-piece wheels.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair and replacement of motorcycle wheel assemblies</li> <li>• regulatory and legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<b>Removal options</b> may include:	<ul style="list-style-type: none"> <li>• front wheel removal</li> <li>• rear wheel removal</li> <li>• removal of other systems to gain access to wheel.</li> </ul>
<b>Inspection of wheel assembly</b> may include:	<ul style="list-style-type: none"> <li>• tyre condition</li> <li>• rim condition</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• wheel bearing condition.</li></ul>
<i>Adjustments</i> may include:	<ul style="list-style-type: none"><li>• spoke tensioning</li><li>• axle nut tensioning</li><li>• drive chain or drive belt tensioning.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Motorcycle
<b>Unit sector</b>	Technical – Wheels and Tyres

**Custom Content Section**

Not applicable.

## AURJTQ2001 Inspect and service motorcycle driveline systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect and service driveline systems fitted to motorcycles.</p> <p>The unit involves an inspection of the driveline system to note deviations from correct operation as well as service to ensure the system complies with manufacturer's specifications.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the driveline systems of motorcycles and motor scooters, including road, off-road, agricultural and race applications.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and service motorcycle driveline system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting and servicing <b>motorcycle driveline systems</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect motorcycle driveline system	<p>2.1. Inspection is carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Service motorcycle driveline system	<p>3.1. <b>Service options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Service and adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p>
4. Clean up work area and finalise work processes	<p>4.1. <b>Final inspection</b> is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. <b>Service schedule documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to interpret gauges, instruments and measuring equipment
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection and servicing of motorcycle driveline systems
- technology skills to use technology to collect and provide information.

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- operating principles of motorcycle driveline systems
- methods of sourcing information relevant to inspecting and servicing motorcycle driveline systems
- inspection procedures for motorcycle driveline systems
- service procedures for motorcycle driveline systems
- workplace documentation policies and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect and service a range of motorcycle driveline systems, including motorcycle chain, belt and driveshaft systems according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles and motorcycle driveline system components
- tools and equipment appropriate for the inspection and servicing of motorcycle driveline systems
- specifications and workplace instructions.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle driveline system inspection and servicing methods, processes and equipment.</li> </ul>
<b>Motorcycle driveline systems</b> must include:	<ul style="list-style-type: none"> <li>• chain drive</li> <li>• belt drive</li> <li>• driveshaft drive.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection and servicing of motorcycle driveline systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>motorcycle service requirements and repair manuals.</li> </ul>
<i>Service options</i> may include:	<ul style="list-style-type: none"> <li>fluid replacement</li> <li>adjustments and operational testing.</li> </ul>
<i>Final inspection</i> may include:	<ul style="list-style-type: none"> <li>final check of motorcycle driveline fluid levels</li> <li>checking of motorcycle driveline system operation during mobile or stationary tests</li> <li>cleaning of motorcycle.</li> </ul>
<i>Service schedule documentation</i> may include:	<ul style="list-style-type: none"> <li>motorcycle service book</li> <li>job card or work order</li> <li>workplace computerised or written records and invoice.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Motorcycle
<b>Unit sector</b>	Technical – Driveline and Final Drives

**Custom Content Section**

Not applicable.

## AURJTQ3002 Diagnose and repair motorcycle driveline systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair driveline systems fitted to motorcycles. It involves diagnosing deviations from correct operation, repairing driveline system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the driveline systems of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a motorcycle driveline system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to diagnosing and repairing <b>motorcycle driveline systems</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a motorcycle driveline system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a motorcycle driveline system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - calculate ratios
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of motorcycle driveline systems, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with motorcycle driveline systems
- operating principles of motorcycle driveline systems
- application, purpose and operation of motorcycle driveline systems, including:
  - driveshaft systems
  - chain and sprocket systems
  - belt drive systems
- testing procedures of motorcycle driveline systems
- repair procedures of motorcycle driveline systems
- post-repair testing procedures of motorcycle driveline systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of motorcycle driveline systems, including motorcycle chain, belt and driveshaft systems
- diagnose and repair motorcycle driveline systems according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles with driveline system faults relevant to the qualification being sought
- equipment appropriate for the testing of motorcycle driveline systems

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- specifications and workplace instructions
- tooling appropriate for the repair, replacement and adjustment of motorcycle driveline systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle driveline system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Motorcycle driveline systems</b> must include:	<ul style="list-style-type: none"> <li>• chain drive</li> <li>• belt drive</li> <li>• driveshaft drive.</li> </ul>
<b>Workplace health and safety requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of motorcycle driveline systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>motorcycle service requirements and repair manuals.</li> </ul>
<b><i>Diagnosis tests</i></b> may include:	<ul style="list-style-type: none"> <li>visual inspection of driveline system components</li> <li>measurement of driveline wear</li> <li>evaluation of abnormal noises</li> <li>isolation of fault(s).</li> </ul>
<b><i>Fault(s)</i></b> may include:	<ul style="list-style-type: none"> <li>abnormal driveline system noise or operation</li> <li>rear wheel loss of power</li> <li>rear wheel lock-up</li> <li>driveline system leaks.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>component repair procedures, including:               <ul style="list-style-type: none"> <li>removal, replacement and adjustment procedures</li> <li>dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>mobile or stationary tests to evaluate driveline system performance.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical - Motorcycle
<b>Unit sector</b>	Technical - Driveline and Final Drives

**Custom Content Section**

Not applicable.

## AURJTR5001 Analyse and evaluate motorcycle electrical and electronic system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT573293A Analyse and evaluate motorcycle electrical/electronic system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate motorcycle electrical/electronic systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning motorcycle electrical/electronic systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Motorcycle electrical/electronic system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary motorcycle electrical/electronic systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- motorcycle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- electrical theory covering voltage, current, resistance, power, magnetism and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, function, operations and limitations of motorcycle electrical/electronic systems/components.
- general knowledge of the Australian design rules requirements related to motorcycle electrical/electronic systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of automotive digital computing systems.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to:             <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three motorcycle electrical/electronic systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for motorcycle electrical/electronic systems.</li> <li>• Document and report the diagnostic process and findings and recommended rectification for two of the above.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, motorcycle electrical/electronic systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<b>Method of assessment</b>	Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

## EVIDENCE GUIDE

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Motorcycles</b>	Motorcycles are to include two-wheel, four-wheel and two-wheel fitted with sidecar.
<b>Electrical/electronic systems</b>	Electrical/electronic systems covered in this unit are to include lighting, ignition, charging, fuel injection, ABS, engine management and safety lock-out systems.
<b>Electrical/electronic systems failures</b>	<ul style="list-style-type: none"> <li>Electrical/electronic system failures covered in this unit are to include lighting (short circuit, grounded circuit, open circuit, faulty equipment, switches and relays), ignition (no-start, no-run, misfire, erratic operation, lack of power, charging, security lock-out), fuel injection (contamination, loss of power, no-start, poor or erratic running, abnormal emissions), ABS (intermittent faults, operator feedback), engine management (poor performance, lack of power, erratic running, induction interference), safety lock-out systems (failure to crank, engine stops).</li> <li>Electrical/electronic system failures covered in this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the

<b>RANGE STATEMENT</b>	
	analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include ABS diagnostic tooling, computer-based diagnostic systems, electronic vacuum gauge, engine control unit analyser, engine emission tester, fuel pressure and flow meter, headlight aiming testing equipment, injector tester, LED test lights, magnetic coil condenser tester, multimeter, peak voltage meters, resistor flow dynamometer, vacuum gauge.
<b>Tests</b>	Tests to be conducted are to include accumulator pressure, disc stack height, pressure, system performance (distance/balance), sensor/actuator and wiring harness integrity, sampling (collection and processing, wear analysis (drum/disc/lining material) and monitoring/analysis of computer-based diagnostic systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to motorcycle electrical/electronic systems.</li> <li>• Australian Design Rules.</li> <li>• Motorcycle industry regulations.</li> <li>• Motorcycle industry publications related to emerging electrical/electronic system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Motorcycle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Electrical and Electronic
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## AURJTX3001 Diagnose and repair motorcycle clutch systems

### Modification History

Release	Comment
Release 1	Replaces AURT306170A Inspect, service and/or repair clutch assemblies and associated operating system components  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern motorcycle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair clutch systems fitted to motorcycles. It involves diagnosing deviations from correct operation, repairing clutch system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the clutch systems of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a motorcycle clutch system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a motorcycle clutch system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a motorcycle clutch system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - measure and calculate length, area and volume
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of motorcycle clutch systems, including the use of:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- specialised tools and equipment
- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements dangers of working with motorcycle clutch systems
- operating principles of motorcycle clutch systems
- application, purpose and operation of motorcycle clutch systems, including:
  - wet clutch systems
  - slipper clutch systems
- testing procedures for motorcycle clutch systems
- repair procedures for motorcycle clutch systems
- post-repair testing procedures for motorcycle clutch systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of motorcycle clutch systems, including motorcycle wet clutch and slipper clutch systems, according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles with clutch system faults relevant to the qualification being sought
- equipment appropriate for the testing of motorcycle clutch systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of motorcycle clutch systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle clutch system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of motorcycle clutch systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<b>Diagnostic tests</b> may	<ul style="list-style-type: none"> <li>• visual inspection of clutch system components</li> <li>• measurement of linkage and actuator adjustments</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• clutch performance testing</li> <li>• clutch fluid evaluation</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• slipping clutch</li> <li>• dragging clutch</li> <li>• excessive clutch lever travel</li> <li>• hydraulic clutch operating system leaks</li> <li>• clutch lever and cable faults</li> <li>• abnormal clutch system noise or smell.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• mobile or stationary tests to evaluate clutch system performance.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Motorcycle
<b>Unit sector</b>	Technical - Transmission

**Custom Content Section**

Not applicable.

## AURJTX3002 Diagnose and repair motorcycle manual transmissions

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair manual transmissions fitted to motorcycles. It involves diagnosing deviations from correct operation, repairing manual transmission components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the manual transmissions of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a motorcycle manual transmission	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a motorcycle manual transmission	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a motorcycle manual transmission	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - calculate ratios
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of motorcycle manual transmissions, including the use of:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- specialised tools and equipment
- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing motorcycle manual transmissions
- operating principles of motorcycle manual transmissions
- application, purpose and operation of motorcycle manual transmissions
- testing procedures for motorcycle manual transmissions
- repair procedures for motorcycle manual transmissions
- post-repair testing procedures for motorcycle manual transmissions

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of motorcycle manual transmissions
- diagnose and repair motorcycle manual transmissions according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycle with manual transmission faults relevant to the qualification being sought
- equipment appropriate for the testing of motorcycle manual transmissions

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of motorcycle manual transmissions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• light vehicle manual transmission diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of motorcycle manual transmissions</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<b>Diagnosis tests</b> may include:	<ul style="list-style-type: none"> <li>• visual inspection of linkages and shafts</li> <li>• evaluation of abnormal noises</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• component inspection and evaluation</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Fault(s)</i></b> may include:	<ul style="list-style-type: none"> <li>• abnormal transmission noise or operation</li> <li>• difficult engagement of gears</li> <li>• jumping out of gears</li> <li>• transmission fluid leaks.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• mobile or stationary tests to evaluate manual transmission performance.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical - Motorcycle
<b>Unit sector</b>	Technical - Transmission

**Custom Content Section**

Not applicable.

## AURJTX3003 Diagnose and repair motorcycle automatic transmissions

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair automatic transmissions fitted to motorcycles. It involves diagnosing deviations from correct operation, repairing automatic transmission components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the automatic transmissions of motorcycles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a motorcycle automatic transmission	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a motorcycle automatic transmission	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a motorcycle automatic transmission	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - calculate ratios
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of motorcycle automatic transmissions, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing motorcycle automatic transmissions
- operating principles of motorcycle automatic transmissions
- application, purpose and operation of motorcycle automatic transmissions, including:
  - continuously variable transmissions (CVT)
- testing procedures for motorcycle automatic transmissions
- repair procedures for motorcycle automatic transmissions
- post-repair testing procedures for motorcycle automatic transmissions

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of motorcycle automatic transmissions
- diagnose and repair motorcycle automatic transmissions according to workplace, manufacturer and component supplier requirements
- present motorcycle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- motorcycles with automatic transmission faults relevant to the qualification being sought
- equipment appropriate for the testing of motorcycle automatic

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

transmissions

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of motorcycle automatic transmissions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• motorcycle automatic transmission diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of motorcycle automatic transmissions</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<b>Diagnosis tests</b> may include:	<ul style="list-style-type: none"> <li>• visual inspection of linkages and shafts</li> <li>• hydraulic pressure tests</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• component inspection and evaluation</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Fault(s)</i></b> may include:	<ul style="list-style-type: none"> <li>• transmission slippage or loss of drive</li> <li>• harsh gearshifts</li> <li>• flaring gearshifts</li> <li>• transmission fluid leaks</li> <li>• abnormal transmission noise or smell.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including:               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• mobile or stationary tests to evaluate automatic transmission performance</li> <li>• stall tests</li> <li>• hydraulic pressure tests.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Motorcycle
<b>Unit sector</b>	Technical - Transmission

**Custom Content Section**

Not applicable.

## AURJTY3001 Repair and align motorcycle frames

### Modification History

Release	Comment
Release 1	Replaces AURV328166A Repair and align motorcycle frames Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out inspection and determine repairs required, replace and repair components and align motorcycle frame/components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, the replacement, repair and alignment of frames and completion of work finalisation processes, including clean-up and documentation.</p> <p>This competence unit applies to all types of motorcycle frames, including for those with side cars and carrying compartments.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake frame alignment and repair	<p>1.1.The nature and scope of the work requirements are identified and confirmed.</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work.</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced.</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.5.Technical and/or calibration requirements for frame alignment and repair are sourced and support equipment is identified and prepared.</p>
2. Inspect and measure to determine repair requirements	<p>2.1.Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2.Detailed inspection report is prepared to guide the assessment of repair options.</p> <p>2.3.Work is completed without causing damage to any component or system.</p> <p>2.4.Inspection activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.5.Results of inspection are documented/processed in accordance with enterprise requirements.</p>
3. Replace and repair frame components	<p>3.1.Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2.Repair/replacement is completed without causing damage to any component or system.</p> <p>3.3.Replacement and repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Align frame and components	<p>4.1.Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>4.2.Alignment of frame and components is carried out in accordance with vehicle manufacturer/component supplier specifications for methods, equipment used and tolerances.</p> <p>4.3.Alignment is completed without causing damage to any component or system.</p> <p>4.4.All alignment activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>

ELEMENT	PERFORMANCE CRITERIA
5. Prepare frame for delivery to customer and/or storage	<p>5.1.Alignment/repair documentation completed.</p> <p>5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4.Frame is prepared and/or stored to workplace expectations.</p> <p>5.5.Job card is processed in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair and alignment of motorcycle frames, including specialist tooling, the use of measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- industry code of practice
- principles of frame alignment and steering geometry as applied to motorcycles
- alignment procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting measurements
- conducting the repair and alignment of a range of frames in accordance with the workplace and manufacturer/component supplier requirements
- completing repair and alignment of frames and associated components within workplace timeframes
- frame presentation to customer in compliance with workplace requirements
- completing workplace documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair and alignment of motorcycle frames
- equipment, hand and power tooling appropriate to repair and alignment of motorcycle frames
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Repairs and alignment methods</b>	Repair and alignment methods are to include: <ul style="list-style-type: none"> <li>• visual, aural and functional assessment (including damage, wear and breakage)</li> <li>• using principles, angles and geometry of vehicle wheel and frame alignment.</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory</b>	Statutory/regulatory authorities may include Federal,

<b>RANGE STATEMENT</b>	
<b>authorities</b>	State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for removal/adjustment, measuring equipment, pressing equipment, heating equipment, pullers, welders - MMAW, oxy, GMAW, GTAW, lifting equipment, testing equipment and air operated equipment.
<b>Materials</b>	Materials may include spare parts and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair and alignment of motorcycle frames</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Motorcycle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Chassis and Frame
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## AURKTA3001 Synchronise plant and equipment

### Modification History

Release	Comment
Release 1	Replaces AURT300373A Synchronise plant/equipment Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence required to synchronise plant/equipment.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	Work involved includes plant/equipment used for specific applications.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake synchronising operations	1.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.2.Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.3.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.4.Technical and/or calibration requirements for synchronising are sourced and support equipment is identified and prepared 1.5.Warnings in relation to working with plant/equipment are observed
2. Conduct synchronising procedures	2.1.Methods for synchronising procedures are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Synchronising procedures are implemented 2.3.Documentation of synchronising tests are completed
3. Analyse results	3.1.Operational functions are carried out and test results are compared with manufacturer/component supplier specifications 3.2.Results are analysed to indicate compliance or non-compliance 3.3.Results are documented with evidence and supporting information and recommendation(s) made 3.4.Report is forwarded to persons for action in accordance with workplace procedures
4. Prepare plant and equipment for use or storage	4.1.Workplace documentation is completed 4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3.Final inspection is made to ensure work is to workplace expectations 4.4.Plant/equipment is cleaned for use or storage to workplace expectations 4.5.Job card is completed and delivered to appropriate persons

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to synchronising plant/ equipment, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with vehicles and/or plant and equipment
- operating principles of engines and associated components and their relationship to each other
- workshop and site synchronisation procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing the synchronisation of plant/equipment to workplace and manufacturer/component supplier requirements
- conducting testing and inspections in accordance with workplace requirements
- interpreting test results
- completing the work within workplace timeframes
- presenting plant/equipment to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to synchronising plant/equipment
- equipment, hand and power tooling appropriate to synchronising plant/equipment
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load testing devices and sample analysis equipment

RANGE STATEMENT	
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to synchronising plant/ equipment</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Mobile Plant
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURKTA3002 Inspect, service and repair harvesting equipment

### Modification History

Release	Comment
Release 1	<p>Replaces AURT300471B Inspect, service and repair harvesting equipment</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the inspection, service and repair of harvesting equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Harvesting equipment refers to specialised equipment involved in harvesting. It does not cover generalised equipment and systems which form the platform or the towing vehicle.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and analysis of results, servicing and repair of equipment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect harvesting equipment	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including State/Territory regulatory requirements and personal protection needs are observed throughout work 1.3. Procedures and information such as workshop manuals, specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for inspecting harvesting equipment are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with harvesting equipment observed
2. Conduct inspection and analyse results	2.1. Methods for inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is processed in accordance with workplace procedures
3. Service and repair harvesting equipment	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information are identified and sourced 3.3. Technical and tool requirements for service and repair are identified and support equipment is identified and prepared 3.4. Methods for service and repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.5. Adjustments made during the service and repair are in accordance with manufacturer/component supplier specifications
4. Prepare equipment for operation	4.1. Variable operating parameters are identified from manufacturer/component supplier specifications and analysis of proposed working environment and conditions 4.2. Equipment variables, including management systems

ELEMENT	PERFORMANCE CRITERIA
	<p>settings, controls and monitoring systems are established and prepared for proposed operations</p> <p>4.3. Equipment and systems are test run and final adjustments are made to achieve and maintain operating parameters</p> <p>4.4. Regulatory requirements, including equipment safety and environmental compliance, are applied and satisfied</p>
5. Prepare equipment for use or storage	<p>5.1. Service/repairs schedule documentation is completed</p> <p>5.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3. Final inspection is made to ensure work is to workplace expectations</p> <p>5.4. Equipment is cleaned for use or storage to workplace expectations</p> <p>5.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with others
- help persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing and repair of harvesting equipment, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with harvesting equipment
- operating principles of harvesting equipment and their relationship to each other
- equipment operating parameters and the factors which will impact on these
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service and/or repair procedures
- enterprise quality procedures

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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| <ul style="list-style-type: none"><li>• work organisation and planning processes</li></ul> |
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing a minimum of four full cycles requiring inspection, servicing, repair and preparing of harvesting equipment for operations, ensuring:
  - accurate interpretation of inspection results
  - completion of inspection, service and repair in accordance with workplace and manufacturer/ component supplier requirements
  - completion of work within workplace timeframes
  - preparation of equipment for operations
  - equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection/servicing and repair of harvesting equipment
- equipment, hand and power tooling appropriate to the service and repair of harvesting equipment
- activities covering mandatory task requirements

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Harvesting equipment</b>	Harvesting equipment may include grain, cane, cotton, rice, forage, sugar and balers
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, machine hygiene, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice

**RANGE STATEMENT**

<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, diagnostic and monitoring systems, meters, gauges, load testing devices and pulling and pushing devices
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the inspection, servicing and repair of harvesting equipment</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Mobile Plant
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURKTA3003 Inspect, service and repair crop planting and seeding equipment

### Modification History

Release	Comment
Release 1	<p>Replaces AURT300571A Inspect, service and repair crop planting and seeding equipment</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the inspection, service and repair of crop planting and seeding equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Crop planting and seeding equipment refers to specialised equipment involved in planting and seeding. It does not cover generalised equipment and systems which form the platform or the towing vehicle.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and analysis of results, servicing and repair of equipment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves purpose-designed and constructed crop planting and seeding equipment which may be self-propelled, towed or airborne.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect crop planting and seeding equipment	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for inspecting crop planting and seeding equipment are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with crop planting and seeding equipment observed
2. Conduct inspection and analyse results	2.1. Methods for inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is processed in accordance with workplace procedures
3. Service and repair crop planting and seeding equipment	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information are identified and sourced 3.3. Technical and tool requirements for service and repair are identified and support equipment is identified and prepared 3.4. Methods for service and repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.5. Adjustments made during the service and repair are in accordance with manufacturer/component supplier specifications
4. Prepare equipment for operation	4.1. Variable operating parameters are identified from manufacturer/component supplier specifications and analysis of proposed working environment and conditions 4.2. Equipment variables, including management systems

ELEMENT	PERFORMANCE CRITERIA
	<p>settings, controls and monitoring systems are established and prepared for proposed operations</p> <p>4.3. Equipment and systems are test run and final adjustments are made to achieve and maintain operating parameters</p> <p>4.4. Regulatory requirements, including equipment safety and environmental compliance, are applied and satisfied</p>
5. Prepare equipment for use or storage	<p>5.1. Service/repairs schedule documentation is completed</p> <p>5.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3. Final inspection is made to ensure work is to workplace expectations</p> <p>5.4. Equipment is cleaned for use or storage to workplace expectations</p> <p>5.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing and repair of crop sewing and seeding equipment, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with crop planting and seeding equipment
- operating principles of crop planting and seeding equipment and their relationship to each other
- equipment operating parameters and the factors which will impact on these
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service and/or repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing a minimum of four full cycles requiring inspection, servicing, repair and preparing of crop planting/seeding equipment for operations ensuring;
  - accurate interpretation of inspection results
  - completion of inspection, service and repair in accordance with workplace and manufacturer/ component supplier requirements
  - completion of work within workplace timeframes
  - preparation of equipment for operations
  - equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the servicing and repair of crop planting and seeding equipment
- equipment, hand and power tooling appropriate to the service and repair of crop planting and seeding equipment
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, machine hygiene, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, diagnostic and monitoring systems, meters, gauges, load testing devices, and

**RANGE STATEMENT**

	pulling and pushing devices
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the inspection, servicing and repair of crop planting and seeding equipment</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Mobile Plant
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURKTA3004 Inspect, service and repair spraying and spreading equipment

### Modification History

Release	Comment
Release 1	<p>Replaces AURT300671A Inspect, service and repair spraying and spreading equipment</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the inspection, service and repair of spraying and spreading equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Spraying and spreading equipment refers to specialised equipment involved in spraying and spreading. It does not cover generalised equipment and systems which form the platform or the towing vehicle.</p> <p>Spraying and spreading equipment covered by this unit is characterised by being purpose built and having controls for pressure, volume and coverage.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and analysis of results, servicing and repair of equipment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect spraying and spreading equipment	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for inspecting spraying and spreading equipment are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with spraying and spreading equipment observed
2. Conduct inspection and analyse results	2.1. Methods for inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is processed in accordance with workplace procedures
3. Service and repair spraying and spreading equipment	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information are identified and sourced 3.3. Technical and tool requirements for service and repair are identified and support equipment is identified and prepared 3.4. Methods for service and repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.5. Adjustments made during the service and repair are in accordance with manufacturer/component supplier specifications
4. Prepare equipment for operation	4.1. Variable operating parameters are identified from manufacturer/component supplier specifications and analysis of proposed working environment and conditions 4.2. Equipment variables, including management systems

ELEMENT	PERFORMANCE CRITERIA
	<p>settings, controls and monitoring systems are established and prepared for proposed operations</p> <p>4.3. Equipment and systems are test run and final adjustments are made to achieve and maintain operating parameters</p> <p>4.4. Regulatory requirements, including equipment safety and environmental compliance, are applied and satisfied</p>
5. Prepare equipment for use or storage	<p>5.1. Service/repairs schedule documentation is completed</p> <p>5.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3. Final inspection is made to ensure work is to workplace expectations</p> <p>5.4. Equipment is cleaned for use or storage to workplace expectations</p> <p>5.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing and repair of spraying and spreading equipment, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with spraying and spreading equipment
- operating principles of spraying and spreading equipment and their relationship to each other
- equipment operating parameters and the factors which will impact on these
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service and/or repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing a minimum of four full cycles requiring inspection, servicing, repair and preparing of spraying and spreading equipment for operations ensuring;
- accurate interpretation of inspection results
- completion of inspection and service and repair in accordance with workplace and manufacturer/ component supplier requirements
- completion of the work within workplace timeframes
- preparation of equipment for operations
- equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the servicing and repair of spraying and spreading equipment
- equipment, hand and power tooling appropriate to the service and repair of spraying and spreading equipment
- activities covering mandatory task requirements

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• specifications and work instructions</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Spraying and spreading equipment</b>	Spraying and spreading equipment may be self-propelled, trailed and three-point linkage
<b>Spraying equipment</b>	Spraying equipment is used for distribution of liquid pesticides, herbicides and fertilisers
<b>Spreading equipment</b>	Spreading equipment is used for distribution of solids and semi-solids, including fertilisers and waste products
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, machine hygiene, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and

<b>RANGE STATEMENT</b>	
	procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, diagnostic and monitoring systems, meters, gauges, load testing devices, and pulling and pushing devices
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the inspection, servicing and repair of spraying and spreading equipment</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Mobile Plant
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURKTA3005 Inspect, service and repair tracked type drive and support systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT316271A Inspect, service and repair tracked type drive and support systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the inspection, service and repair of track type drive and support systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection of tracked type drive and support systems, analysis of inspection results, repair and servicing of track drive and support systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves track driven type vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect tracked type drive and support systems	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and calibration requirements for inspection of track type drive and support systems are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with track type drive and support systems are observed</p>
2. Conduct inspection and analyse results	<p>2.1.Methods for inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Prepare to service and repair track type drive and support systems	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for service and repair are identified and support equipment is identified and prepared</p>
4. Carry out service and repairs	<p>4.1.Methods for service and repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments made during the service and repair are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle for delivery to customer or storage	<p>5.1.Service/repair schedule documentation is completed</p> <p>5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>expectations</p> <p>5.4.Vehicle is cleaned for delivery to customer or stored to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to the inspection, service and repair of track type drive and support systems, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with track type drive and support systems
- the identification of application, purpose and operation
- the identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service and repair procedures
- enterprise quality procedures

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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| <ul style="list-style-type: none"><li>• work organisation and planning processes</li></ul> |
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection, service and repair of different tracked type drive and support systems in accordance with manufacturer/component supplier and workplace requirements
- interpreting inspection results
- completing service and repair within workplace timeframes
- presenting vehicle to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection, service and repair of track type drive and support systems
- equipment, hand and power tooling appropriate to the inspection, service and repair of track type drive and support systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

## EVIDENCE GUIDE

	<p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Variables</b>	Variables to include idlers, rollers, drive sprocket, track frame
<b>Servicing</b>	Servicing to include fluids, filters, adjustments, operational testing, visual inspections and records
<b>Repair methods</b>	Repair methods and sequence are to include isolation of fault(s), dismantling, inspection and evaluation, replacement of components parts, assembly and completion of operational tests and records
<b>Faults</b>	Faults include misalignment wear, pin and bush excessive wear, grouser wear and track tension
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management

**RANGE STATEMENT**

<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing and pulling or pushing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection, service and repair of track type drive and support systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Mobile Plant
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical
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## AURKTA4009 Diagnose complex faults in mobile plant hydraulic systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in mobile plant hydraulic systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of hydraulic systems in the mobile plant environment.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning mobile plant hydraulic systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies or discrepancies or <b>faults</b> in mobile plant hydraulic systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to mobile plant hydraulic systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of mobile plant hydraulic systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to mobile plant hydraulic systems
- concepts, types, functions, operations and limitations of mobile plant hydraulic systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to mobile plant hydraulic systems
- testing procedures for mobile plant hydraulic systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different mobile plant hydraulic systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in mobile plant hydraulic systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated mobile plant hydraulic system faults

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- tools and equipment appropriate for the diagnosis of complex faults in mobile plant hydraulic systems
- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults*** may include:

- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- direct faults in input sensors, output actuators, wiring harness, computer systems, calibration or adjustment specifications
- component specifications, component assembly, component damage and system modifications
- indirect mechanical faults
- mechanical and hydraulic system faults

***Tests*** may include:

- wiring and connector integrity
- operation and specification of input and output devices
- controlling electronic components and computers
- data interpretation and readings related to direct indirect and intermittent causes
- hydraulic systems testing
- electrical systems testing
- mechanical systems testing
- road test.

***Testing equipment*** may include:

- analogue and digital multimeters
- lab oscilloscopes
- scan tools
- test lights and test LEDs
- pulse generators
- manufacturer and component supplier testing equipment

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• pressure gauges</li></ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"><li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to mobile plant hydraulic systems</li><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURKTA5006 Analyse and evaluate tracked mobile plant transmission, steering and braking systems faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT572393A Analyse and evaluate tracked mobile plant transmission, steering and braking systems faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate tracked mobile plant transmission, steering and braking systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning tracked mobile plant transmission, steering and braking systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Tracked mobile plant transmission, steering and braking system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

## REQUIRED SKILLS AND KNOWLEDGE

### Required skills

- research, organise and understand technical information related to contemporary tracked mobile plant transmission, steering and braking systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

### Required knowledge

- tracked mobile plant terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance (including semi-conductors and electronic system applications).
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- the functions of hydraulic pressure with transmission, steering and braking systems.
- detailed knowledge of tracked mobile plant transmission systems/components.
- detailed knowledge of the types, function, operations and limitations of tracked mobile plant steering and braking systems/components.
- detailed knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li></ul>

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three tracked mobile plant transmission, steering and braking systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for tracked mobile plant transmission, steering and braking systems.</li> <li>• Document and report the diagnostic process and findings and recommended rectification for two of the above.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, tracked mobile plant transmission, steering and braking systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<b>Method of assessment</b>	Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require

## EVIDENCE GUIDE

	<p>portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### **Failure analysis and evaluation process**

The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.

#### **Steering and braking systems**

Steering and braking systems to be covered in this unit are to include mechanical and hydraulic operated steering clutch/brake, independent drives, planetary and differential planetary, hydrostatic drive, single and multi-disc brake units.

#### **Transmission, steering and braking failures**

- Transmission, steering and braking failures covered by this unit are to include those to mechanical, hydraulic and electrical/electronic systems, including control systems, emergency systems, directional stability,

<b>RANGE STATEMENT</b>	
	<p>calibration/adjustment specifications, contamination, component specifications, component assembly, component damage and system modifications .</p> <ul style="list-style-type: none"> <li>• Transmission, steering system and braking failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations</li> </ul>
<b>Tracked mobile plant</b>	Tracked mobile plant covers all mobile plant with tracked undercarriage. Included are tracked type loaders, crawler tractors tracked type plant, hydraulic excavators and face shovels, material handling machines, agricultural tracked equipment and other rural equipments.
<b>Transmission systems</b>	Transmission systems to be covered in this unit are to include mechanical, power shift and automatic transmissions, clutches, torque converters, drivelines and final drive sub-systems.
<b>Coverage</b>	Coverage is to include infinitely variable transmission (belt, hydraulic and planetary).
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.

RANGE STATEMENT	
Testing equipment	Testing equipment is to include pressure and temperature gauges, flow meters, multimeter, data readers, computer-based diagnostic systems.
Tests	Tests to be conducted are to include system pressures, flow rates, stall testing, operating temperatures, and sensor and actuator integrity.
Personal protective equipment	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
Information and procedures	<ul style="list-style-type: none"><li>• Workplace procedures relating to the use of tooling and equipment.</li><li>• Workplace procedures relating to reporting and communication.</li><li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to tracked mobile plant steering and braking systems.</li><li>• Australian Design Rules.</li><li>• Vehicle industry regulations.</li><li>• Vehicle industry publications related to emerging steering and braking system technology and technology changes.</li></ul>

## Unit Sector(s)

Unit sector	Technical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURKTA5007 Analyse and evaluate mobile plant hydraulic system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT572693A Analyse and evaluate mobile plant hydraulic system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate mobile plant hydraulic systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning mobile plant hydraulic systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Mobile plant hydraulic system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary mobile plant hydraulic systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- wheeled and tracked mobile plant terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance (including semi-conductors and electronic system applications).
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, function and limitations of wheeled and tracked mobile plant excavating and ground engaging systems/components.
- general knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three mobile plant hydraulic systems with real or simulated multi-system and intermittent faults and identify and evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for mobile plant hydraulic systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, mobile plant hydraulic systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Mobile plant</b>	Mobile plant covers all mobile plant with both wheeled and tracked undercarriage. Included are loaders, dump trucks, graders, scrapers, industrial tractors, crawler tractors, excavator plant, material handling machines, agricultural harvesters and other rural equipment.
<b>Hydraulic systems</b>	Hydraulic systems to be covered in this unit are to include all hydraulic systems or attachments and ground engaging equipment other than the transmission, steering, braking or suspension systems. Coverage is to include compensated systems, pressure and flow (PFC) and load sensing systems.
<b>Failures</b>	Failures covered by this unit are to include those to mechanical, hydraulic and electrical/electronic systems, including control systems, emergency systems, vibration, calibration/adjustment specifications, contamination, component specifications, component assembly, component damage and system modifications.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.

<b>RANGE STATEMENT</b>	
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include stop watches, pressure gauges, flow meters, multimeter, data readers, computerised diagnostic system.
<b>Tests</b>	Tests to be conducted are to include pressure, flow and temperature, cycle time performance, filter inspection, sequencing, sensor and actuator integrity and wiring harness integrity.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"><li>• Workplace procedures relating to the use of tooling and equipment.</li><li>• Workplace procedures relating to reporting and communication.</li><li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to mobile plant hydraulic systems.</li><li>• Australian Design Rules.</li><li>• Vehicle industry regulations.</li><li>• Vehicle industry publications related to emerging hydraulic system technology and technology changes.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Mobile Plant
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURKTB3001 Diagnose and repair mobile plant braking systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to repair braking systems and associated components. It involves identifying and confirming safety requirements, diagnosing deviations from correct operation, repairing mobile plant braking system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the braking systems of mobile plant equipment in construction, mining and agricultural environments.</p> <p>This unit does not apply to work relating to anti-lock braking systems (ABS) or to air braking systems.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a mobile plant braking system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Safety issues and warnings</b> in relation to working with heavy mobile equipment and its braking systems are identified and applied</p> <p>1.5. Diagnosis options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6. Appropriate <b>diagnostic tools and equipment</b> are selected and prepared</p>
2. Diagnose a mobile plant braking system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or system</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. <b>Diagnosis findings</b> are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a mobile plant braking system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>3.2. Tools and testing equipment are identified and checked for safe and effective operation</p> <p>3.3. Repairs, component replacement and adjustment are carried out according to workplace procedures and manufacturer and component supplier specifications, and without causing damage to components or systems</p> <p>3.4. <b>Post-repair testing</b> of braking system is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace procedures</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
  - coordinate work with site supervisor and other workers
  - report work outcomes and problems
- initiative and enterprise skills to:
  - adapt to new and emerging situations in the workplace relating to repairing mobile plant braking systems
- learning skills to:
  - ask questions to gain information
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - read workplace instructions, specifications, warnings and technical procedures
  - produce clear and understandable workplace documentation
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine job requirements
  - determine the underlying causes of faults
  - produce recommendations for necessary repairs or adjustments
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to work in a team, as applicable to the workplace's procedures and practices, to repair mobile plant braking systems
- technical skills to:
  - check and use mobile plant braking system testing and repair equipment
  - carry out measuring and testing, repair and adjustment procedures according to manufacturer and component supplier specifications
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- operate diagnostic and testing equipment
- conduct performance testing of components, systems and equipment
- use tools and equipment efficiently and safely
- store and care for components, parts, tools, test equipment and support equipment

**Required knowledge**

- WHS regulations, requirements, equipment and material relating to mobile plant braking systems, including personal safety requirements
- environmental regulations and requirements relating to mobile plant braking systems
- application, purpose and operating principles of mobile plant braking systems, including:
  - multi-disc wet braking systems, including associated cooling systems
  - disc braking systems
  - drum braking systems
- lifting and support procedures for mobile plant equipment
- testing procedures of mobile plant braking systems
- repair procedures of mobile plant braking systems
- post-repair testing procedures of mobile plant braking systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of mobile plant braking systems
- conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements
- present vehicle and equipment in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- material relevant to the repair of mobile plant braking systems
- equipment, hand and power tools appropriate to the repair of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- mobile plant braking systems
- specifications and work instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• mobile plant equipment braking system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety requirements:</b>	<ul style="list-style-type: none"> <li>• is to include that prescribed under individual legislation, regulations, codes of practice, and workplace policies and practices</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of mobile plant braking systems</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• heavy vehicle service requirements and repair manuals.</li> </ul>
<b>Safety issues and warnings</b>	<ul style="list-style-type: none"> <li>• safe use of tools and equipment</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

must include:	<ul style="list-style-type: none"> <li>• dangers associated with the workplace environment</li> <li>• hazard identification and control of hazardous materials and substances, including hydraulic fluid, brake fluid and brake lining fibres</li> <li>• machine tag-out, isolation and wheel chocking</li> <li>• stored fluid pressures from accumulators</li> <li>• high-pressure fluid hazards.</li> </ul>
<b><i>Diagnostic tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tooling</li> <li>• oil pressure gauges</li> <li>• nitrogen test and charging equipment</li> <li>• lifting and slinging equipment</li> <li>• bleeding and brake testing devices</li> <li>• dust-extraction equipment.</li> </ul>
<b><i>Diagnostic tests</i></b> may include:	<ul style="list-style-type: none"> <li>• stall testing of service, park and secondary brakes</li> <li>• dynamic brake testing</li> <li>• friction material wear</li> <li>• brake drum component serviceability</li> <li>• disc brake component serviceability</li> <li>• multi-disc wet brake component serviceability</li> <li>• vehicle braking efficiency</li> <li>• accumulator pre-charge and oil application pressure testing.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• poor performance of service, park or secondary brakes</li> <li>• failure or partial failure of service, park or secondary brakes</li> <li>• binding of service, park or secondary brakes.</li> </ul>
<b><i>Diagnosis findings</i></b> may include:	<ul style="list-style-type: none"> <li>• comparison of test results to manufacturer specifications</li> <li>• recommendations for repair, adjustment or replacement of parts.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• stall testing of service, park and secondary brakes</li> <li>• dynamic brake testing.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical – Brakes

**Custom Content Section**

Not applicable.

## AURKTB4003 Diagnose complex faults in mobile plant braking systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to diagnose complex faults in mobile plant braking systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies to and includes system fault and failure diagnosis of braking systems in the mobile plant environment.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning mobile plant braking systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, equipment and system isolation requirements and personal protection needs are observed and applied throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in mobile plant braking systems are identified and confirmed from direct and/or indirect evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to mobile plant braking systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of mobile plant braking systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required skills

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to mobile plant braking systems
- types, functions, operations and limitations of mobile plant braking systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to mobile plant braking systems
- testing procedures for mobile plant braking systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different in mobile plant braking systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in mobile plant braking systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated mobile plant braking system faults

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- tools and equipment appropriate for the diagnosis of complex faults in mobile plant braking systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults may include:***

- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- direct faults in input sensors, output actuators, wiring harness, computer systems, calibration or adjustment specifications
- component specifications, component assembly, component damage and system modifications
- indirect mechanical faults.
- mechanical and hydraulic system faults.

***Tests may include:***

- wiring and connector integrity
- operation and specification of input and output devices
- controlling electronic components and computers
- data interpretation and readings related to direct indirect and intermittent causes
- hydraulic systems testing
- electrical systems testing
- mechanical systems testing
- road test.

***Testing equipment may include:***

- analogue and digital multimeters
- lab oscilloscopes
- data scanners
- test lights and test LEDs
- pulse generators
- manufacturer and component supplier testing equipment

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• pressure gauges.</li></ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"><li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to mobile plant braking systems</li><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical – Braking

**Custom Content Section**

Not applicable.

## AURKTB5002 Analyse and evaluate wheeled mobile plant braking system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT572593A Analyse and evaluate wheeled mobile plant braking system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate wheeled mobile plant braking systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning wheeled mobile plant braking systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Wheeled mobile plant braking system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstances, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary wheeled mobile plant braking systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- wheeled mobile plant terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance (including semi-conductors and electronic system applications).
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, functions, operations and limitations of wheeled mobile plant foundation braking systems/components.
- detailed knowledge of the types, functions and limitations of friction materials associated with wheeled mobile plant braking systems.
- detailed knowledge of the types, function, operations and limitations of abs traction control braking systems/components.
- detailed knowledge of the types, function, operations and limitations of air over hydraulic braking systems/ components.
- detailed knowledge of the types, function, operations and limitations of hydraulic over

## REQUIRED SKILLS AND KNOWLEDGE

- hydraulic braking systems/ components.
- detailed knowledge of the types, function, operations and limitations of air braking systems/components.
- detailed knowledge of the types, function, operations and limitations of full hydraulic braking systems/components.
- detailed knowledge of the types, function, operations and limitations of compression braking systems components.
- detailed knowledge of the types, function, operations and limitations of mobile plant retarder systems/components.
- detailed knowledge of the influence of equipment trailing on mobile plant braking systems.
- general knowledge of the Australian design rules requirements related to wheeled mobile plant braking systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- detailed knowledge of automotive digital computing systems.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three wheeled mobile plant braking systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for wheeled mobile plant braking systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, wheeled mobile plant brake systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

## EVIDENCE GUIDE

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Wheeled mobile plant</b>	Wheeled mobile plant covers all mobile plant other than that with tracked undercarriage. Included are loaders, dump trucks, graders, scrapers, industrial tractors, material handling machines, agricultural harvesters and other rural equipment.
<b>Braking systems</b>	Braking systems to be covered in this unit are to include foundation, ABS with traction control, air over hydraulic, hydraulic over hydraulic, air brakes, regenerative braking, full hydraulic, compression and transmission retarders.
<b>Braking system failures</b>	<ul style="list-style-type: none"> <li>Braking system failures covered by this unit are to include air supply capacity and response, application and release times, brake balance, brake drum wear, calibration/ adjustment specifications, component damage, conductors - piping specifications, contamination, fluids out of specification, friction material abnormalities, leaks, overheating and system pressures.</li> <li>Braking system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria

<b>RANGE STATEMENT</b>	
	and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include air gauges, computer-based diagnostic systems, micrometers, multimeter, pressure gauges, temperature gauges and verniers, and may include brake timer and electronic stethoscope.
<b>Tests</b>	Tests to be conducted are to include accumulator pressure, disc stack height, pressure, system performance (distance/balance), sensor/actuator and wiring harness integrity, sampling (collection and processing, wear analysis (drum/disc/lining material) and monitoring/ analysis of computer-based diagnostic systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to wheeled mobile plant braking systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging braking system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Mobile Plant
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURKTD3001 Diagnose and repair mobile plant suspension systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair suspension systems fitted to mobile plant. It involves diagnosing deviations from correct operation, repair operations of suspension systems and associated systems, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the suspension systems of mobile plant in the mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a mobile plant suspension system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a mobile plant suspension system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a mobile plant suspension system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are cleaned and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
  - coordinate work with site supervisor and other workers
  - report work outcomes and problems
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and other measuring equipment
  - measure and calculate length, area and volume
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of mobile plant suspension systems, including the use of:

**REQUIRED SKILLS AND KNOWLEDGE**

- specialised tools and equipment
- measuring equipment
- computerised technology
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements
- dangers of working with mobile plant suspension systems
- application, purpose and operating principles of mobile plant suspension systems
- identification of the effects of associated systems on mobile plant suspension systems
- interpretation of technical information, graphic symbols and diagrams, including hydraulic system power flows
- testing procedures for mobile plant suspension systems
- repair procedures for mobile plant suspension systems
- post-repair testing procedures of mobile plant suspension systems.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of mobile plant suspension systems relative to the qualification being sought
- diagnose and repair mobile plant suspension systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- mobile plant with suspension systems faults relevant to the qualification being sought
- equipment appropriate for the testing of mobile plant

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

suspension systems

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of mobile plant suspension systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• mobile plant suspension systems diagnosis and repair methods, processes and equipment</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of mobile plant suspension systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• mobile plant service requirements and repair manuals.</li> </ul>
<b>Diagnostic tests</b> may	<ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• component inspection and evaluation.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:

***Faults*** may include:

- hydraulic component failure
- mechanical component failure.

***Repair options*** may include:

- component repair procedures, including
  - removal, replacement and adjustment procedures
  - dismantle, repair, re-assembly and adjustment procedures.

***Post-repair testing*** may include:

- hydraulic system pressure tests.

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical – Steering and Suspension

**Custom Content Section**

Not applicable.

## AURKTD3002 Diagnose and repair mobile plant steering systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair steering systems fitted to mobile plant. It involves diagnosing deviations from correct operation, repair operations of steering systems and associated systems, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the steering systems of mobile plant in the mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a mobile plant steering system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a mobile plant steering system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a mobile plant steering system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tooling, techniques and materials are selected and prepared</p> <p>3.3. Repairs, component replacement and adjustments are carried out in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.4. Repairs are performed without causing damage to components or systems</p> <p>3.5. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are cleaned and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
  - coordinate work with site supervisor and other workers
  - report work outcomes and problems
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and other measuring equipment
  - measure and calculate length, area and volume
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of mobile plant steering systems, including the use of:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- specialised tools and equipment
- measuring equipment
- computerised technology
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements
- dangers of working with mobile plant steering systems
- application, purpose and operating principles of mobile plant steering systems
- identification of the effects of associated systems on mobile plant steering systems
- interpretation of technical information, graphic symbols and diagrams, including hydraulic system power flows
- testing procedures for mobile plant steering systems
- repair procedures for mobile plant steering systems
- post-repair testing procedures of mobile plant steering systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of mobile plant steering systems relative to the qualification being sought
- diagnose and repair mobile plant steering systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- mobile plant with steering systems faults relevant to the qualification being sought
- equipment appropriate for the testing of mobile plant steering systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of mobile plant steering systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• mobile plant steering systems diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of mobile plant steering systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• mobile plant service requirements and repair manuals.</li> </ul>
<b>Diagnosis tests</b> may include:	<ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• component inspection and evaluation.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Faults*** may include:

- hydraulic system leaks
- loose steering
- binding steering.

***Repair options*** may include:

- component repair procedures, including:
  - removal, replacement and adjustment procedures
  - dismantle, repair, re-assembly and adjustment procedures.

***Post-repair testing*** may include:

- hydraulic system pressure tests.

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical – Steering and Suspension

**Custom Content Section**

Not applicable.

## AURKTD4005 Diagnose complex faults in mobile plant steering and suspension systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required diagnose complex faults in mobile plant steering and suspension systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of steering and suspension systems in the mobile plant environment.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1.Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2.Specifications for correctly functioning mobile plant steering and suspension systems are accessed and interpreted</p> <p>1.3.<b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4.Effects of systemic deficiencies or discrepancies or <b>faults</b> in mobile plant steering and suspension systems are identified and confirmed from indirect or direct evidence</p> <p>1.5.Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1.Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2.System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3.Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4.<b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5.Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1.Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2.Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3.Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4.Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5.Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to mobile plant steering and suspension systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of mobile plant steering and suspension systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to mobile plant steering and suspension systems
- concepts, types, functions, operations and limitations of mobile plant steering and suspension systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to mobile plant steering and suspension systems
- testing procedures for mobile plant steering and suspension systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• interpret workplace instructions and locate and apply information</li> <li>• apply safety requirements, including the use of personal protective equipment</li> <li>• identify and select appropriate diagnosis processes to be performed</li> <li>• complete diagnosis of complex faults on a minimum of three different simulated mobile plant steering and suspension systems with real or simulated faults</li> <li>• document and report outcomes and required actions of diagnosis of complex faults in simulated mobile plant steering and suspension systems.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles systems with real or simulated mobile plant steering</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

and suspension system faults

- tools and equipment appropriate for the diagnosis of complex faults in mobile plant steering and suspension systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults*** may include:

- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- direct faults in input sensors, output actuators, wiring harness, computer systems, calibration or adjustment specifications
- component specifications, component assembly, component damage and system modifications
- indirect mechanical faults
- mechanical and hydraulic system faults.

***Tests*** may include:

- wiring and connector integrity
- operation and specification of input and output devices
- controlling electronic components and computers
- data interpretation and readings related to direct indirect and intermittent causes
- hydraulic systems testing
- electrical systems testing
- mechanical systems testing
- road test.

***Testing equipment*** may include:

- analogue and digital multimeters
- lab oscilloscopes
- scan tools

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• test lights and test LEDs</li> <li>• pulse generators</li> <li>• manufacturer and component supplier testing equipment</li> <li>• pressure gauges.</li> </ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to mobile plant steering and suspension systems</li> <li>• six-step troubleshooting plan</li> <li>• discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical – Steering and Suspension

## Custom Content Section

Not applicable.

## AURKTD5003 Analyse and evaluate wheeled mobile plant steering and suspension system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT572093A Analyse and evaluate wheeled mobile plant steering and suspension system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate wheeled mobile plant steering and suspension systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning wheeled mobile plant steering and suspension systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Wheeled mobile plant steering and suspension system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary wheeled mobile plant steering and suspension systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- wheeled mobile plant terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetics and inductance (including semi-conductors and electronic system applications).
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- steering system theory, including steering angles.
- the functions of hydraulic pressure with steering and suspension systems.
- detailed knowledge of the types, applications and limitations of wheels and tyres used on wheeled mobile plant.
- detailed knowledge of the types, function, operations and limitations of wheeled mobile plant power assisted steering systems/components.
- detailed knowledge of the types, function, operations and limitations of wheeled mobile plant power full hydrostatic steering systems/components.
- detailed knowledge of the types and influences of trailed equipment operations on wheeled

## REQUIRED SKILLS AND KNOWLEDGE

- mobile plant steering performance.
- detailed knowledge of the types, function and limitations of wheeled mobile plant rigid frame suspension systems/components.
- detailed knowledge of the types, function and limitations of wheeled mobile plant oscillating axles suspension systems/components.
- detailed knowledge of the types, function and limitations of wheeled mobile plant hydrostatic suspension systems/components.
- detailed knowledge of the types, function and limitations of wheeled mobile plant oil/gas suspension systems/components.
- detailed knowledge of the types, function and limitations of wheeled mobile plant cushion hitch suspension systems/components.
- general knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- detailed knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three wheeled mobile plant steering and suspension systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for wheeled mobile plant steering and suspension systems.</li> <li>• Document and report the diagnostic process and findings and recommended rectification for two of the above.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<p><b>Context of, and specific resources for assessment</b></p>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, wheeled mobile plant steering and suspension systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<p><b>Method of assessment</b></p>	<p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or</p>

<b>EVIDENCE GUIDE</b>	
	<p>authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Wheeled mobile plant</b>	Wheeled mobile plant covers all mobile plant other than that with tracked undercarriage. Included are loaders, dump trucks, graders, scrapers, industrial tractors, material handling machines, agricultural harvesters and other rural equipment.
<b>Steering systems</b>	Steering systems to be covered in this unit are to include power-assisted, full hydrostatic and steer-by-wire systems for front, rear, all wheel drive, and articulated arrangements.
<b>Steering failures</b>	Steering failures covered by this unit are to include those in mechanical, hydraulic and electrical/electronic systems, including alignment, control systems, emergency systems, tyre wear, vibration, directional stability, calibration/ adjustment specifications, contamination, component specifications, component assembly, component damage and system modifications.
<b>Suspension systems</b>	Suspension systems are to cover rigid frame, oscillating axles, hydrostatic, oil/gas suspension units and cushion hitch.
<b>Suspension system failures</b>	Suspension system failures covered by this unit are to include alignment, hydraulics, ride height, component damage and systems modifications.
<b>Steering and suspension system failures</b>	Steering and suspension system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation</li> </ul>

## RANGE STATEMENT

	<p>insurance requirements.</p> <ul style="list-style-type: none"> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include tape measures, pressure gauges, flow meters, tyre pressure gauges, string line, multimeter, data readers, computerised diagnostic systems and may include laser and light alignment equipment.
<b>Tests</b>	Tests to be conducted are to include tyre pressures, tyre tread, toe-in, toe-out, system pressures, frame alignment, ride height, wheel bearing specification, leveller operation, sensor and actuator integrity.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to wheeled mobile plant steering and suspension systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Mobile Plant
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURKTD5004 Analyse and evaluate tracked mobile plant undercarriage and suspension system faults

### Modification History

Release	Comment
Release 1	Replaces AURT572493A Analyse and evaluate tracked mobile plant undercarriage and suspension system faults Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to analyse and evaluate tracked mobile plant tracks, undercarriage and suspension systems in order to initiate action to sustain, vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.  The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning tracked mobile plant undercarriage and suspension systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.4. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.5. Tracked mobile plant undercarriage and suspension system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p>

ELEMENT	PERFORMANCE CRITERIA
	3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary tracked, undercarriage and suspension systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- tracked mobile plant terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- electrical theory covering voltage, current, resistance, power, magnetic.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- the functions of hydraulic pressure within undercarriage and suspension systems.
- detailed knowledge of the types, function, operations and limitations of mobile plant tracked systems/components.
- detailed knowledge of the types, function, operations and limitations of tracked mobile plant undercarriage systems/components.
- detailed knowledge of the types, function, operations and limitations of tracked mobile plant suspension systems/components.
- general knowledge of mobile plant digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
equipment. <ul style="list-style-type: none"><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work instructions and requirements and locate, interpret and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Comply with regulatory and commercial obligations.
- Complete failure analyses on a minimum of three undercarriage and suspension systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for plant undercarriage and suspension systems.
- Document and report analysis and evaluation processes, findings and outcomes.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, operational tracked mobile plant undercarriage and suspension systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.

Competence in this unit may be assessed in conjunction with other

<b>EVIDENCE GUIDE</b>	
	functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Tracked mobile plant</b>	Tracked mobile plant covers all mobile plant with tracked undercarriage, including tracked type loaders, crawler tractors tracked type plant, hydraulic excavators and face shovels, material handling machines, agricultural tracked equipment and other rural equipments.
<b>Tracked systems</b>	Tracked systems to be covered in this unit are to include linked, sealed, and sealed and lubricated.
<b>Undercarriage systems and components</b>	Undercarriage systems and components to be covered in this unit are to include rollers, idlers, frames and recoil mechanisms.
<b>Suspension systems and components</b>	Suspension systems and components to be covered in this unit are to include rigid platform, low track, live axle, dead axle and elevated sprocket.
<b>Failures</b>	Failures to be covered in this unit are to include alignment, abnormal wear, component out of specification, component damage, mechanical variations, adjustment errors, inadequate modifications.
<b>Variations and failures</b>	Variations and failures covered by this unit are to include those caused by the influence of external systems which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Standards, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include callipers, infrared temperature sensor, micrometers, profile and template gauges, tape measures, temperature measuring equipment and verniers, and may include laser alignment system and ultrasound systems (metal thickness).
<b>Tests</b>	Tests to be conducted are to include material thickness, temperature variation, tracking alignment, and wear rate analysis.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to tracked mobile plant undercarriage and suspension systems.</li> <li>• Australian Standards.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging undercarriage and suspension system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Mobile Plant
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURKTE5001 Analyse and evaluate mobile plant engine and fuel system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT572293A Analyse and evaluate mobile plant engine and fuel system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate mobile plant engine and fuel systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning mobile plant engine and fuel systems are accessed and interpreted.</p> <p>1.3. National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work.</p> <p>1.4. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.5. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.6. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Mobile plant engine and fuel system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary mobile plant engine and fuel systems, monitoring and testing processes, diagnostic methods and options and safety procedures..
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- mobile plant terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetics and inductance (including semi-conductors and electronic system applications).
- general knowledge of the types, functions, operations and limitations of mobile plant engines.
- detailed knowledge of the types, function, operations and limitations of mobile plant fuel systems/components, including all current electronically controlled and/or actuated arrangements.
- detailed knowledge of the types, function, operations and limitations of mobile plant engine and fuel electrical systems/components.
- detailed knowledge of the types, function, operations and limitations of mobile plant intake systems/components, including charge cooling and after/inter-cooling arrangements.
- detailed knowledge of the types, function, operations and limitations of mobile plant exhaust systems/components, including single and multi-staged turbo charging.
- detailed knowledge of the types, function, operations and limitations of mobile plant

**REQUIRED SKILLS AND KNOWLEDGE**

- lubrication systems/components.
- detailed knowledge of the types, function, operations and limitations of mobile plant cooling systems/components.
- national environment protection measure for diesel vehicles.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- general knowledge of automotive digital computing systems.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three mobile plant engine and fuel systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for mobile plant engine and fuel systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, mobile plant engine and fuel systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Mobile plant</b>	Mobile plant covers all mobile plant, including both wheeled and tracked undercarriage. Included are loaders, dump trucks, graders, scrapers, industrial tractors, materials handling machines, agricultural harvesters and other rural equipment.
<b>Engine and fuel systems</b>	Engine and fuel systems to be covered in this unit are to include the engine and related fuel, electrical, intake, exhaust, lubrication and cooling systems.
<b>Coverage</b>	Coverage is to include electronic monitoring, real time diagnostics, fuel monitoring, closed loop diesel engine management, advanced emission reduction technology, ceramic and other new component materials and evaluation for reuse.
<b>Engine and fuel system failures</b>	<ul style="list-style-type: none"> <li>Engine and fuel system failures covered by this unit are to include engine and fuel management, engine performance (response, fuel consumption, power), charging, contamination, damaged components, emissions, forced induction, fuel pressure/supply, lighting leaks, operating temperature, overheating, sensors, starting.</li> <li>Engine and fuel system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with National Environment Protection Measures for Diesel Vehicles.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include compression gauges, computerised diagnostic system, cooling system analyser, dynamometer, manometer, multimeter, pressure gauges, pyrometer, refractometer, temperature gauges, vacuum gauges and may include anemometer, barometer, hygrometer, specific gravity gauge.
<b>Tests</b>	Tests to be conducted are to include component wear analysis, compression, cylinder leakage, engine performance, exhaust gas sampling, lubricant sampling, oil consumption, pressure sample (intake, exhaust, crank case and turbo-charger boost), sample collection/processing, sensor and actuator integrity and function, temperature and wiring harness integrity.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to mobile plant engine and fuel systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging engine and fuel system technology and technology changes.</li> <li>• Environment Protection Regulations (Diesel Fuels)/ National Environment Protection Measure for Diesel Vehicle Guidelines.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Mobile Plant
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## AURKTQ3001 Diagnose and repair mobile plant final drive assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair final drive assemblies fitted to mobile plant. It involves diagnosing deviations from correct operation, repair operations of final drive assemblies and associated systems, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the final drive assemblies of mobile plant equipment in the mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a final drive assembly	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a final drive assembly	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a final drive assembly	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
  - coordinate work with site supervisor and other workers
  - report work outcomes and problems
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and other measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of mobile plant final drive assemblies, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing mobile plant final drive assemblies
- legislation and regulatory requirements
- dangers of working with mobile plant final drive assemblies
- application, purpose and operating principles of mobile plant final drive assemblies
- testing procedures for mobile plant final drive assemblies
- repair procedures for mobile plant final drive assemblies
- post-repair testing procedures for mobile plant final drive assemblies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of mobile plant final drive assemblies
- diagnose and repair mobile plant final drive assembly according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- mobile plant with final drive assembly faults relevant to the qualification being sought
- equipment appropriate for the testing of mobile plant final drive

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

assemblies

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of mobile plant final drive assemblies.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• mobile plant final drive assembly diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of mobile plant final drive assembly</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• mobile plant final drive assembly service requirements and repair manuals.</li> </ul>
<b>Diagnosis options</b> may	<ul style="list-style-type: none"> <li>• isolation of faults</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• component inspection and evaluation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• loss of drive</li> <li>• noisy final drive assembly.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• assessment of final drive noise</li> <li>• assessment of final drive operation.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical – Driveline and Final Drives

**Custom Content Section**

Not applicable.

## AURKTR3001 Diagnose and repair electric-over-hydraulic control systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to carry out repairs to electric over hydraulic control systems fitted to vehicles. It involves identifying and confirming safety requirements, diagnosing deviations from correct operation, repair operations of electric over hydraulic control systems and associated systems, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the electric over hydraulic control systems of vehicles in the road transport, mining, construction, agricultural, marine and other industrial environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<ul style="list-style-type: none"> <li>1. Prepare to diagnose and repair an electric over hydraulic control system</li> </ul>	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose an electric over hydraulic control system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair an electric over hydraulic control system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
  - coordinate work with site supervisor and other workers
  - report work outcomes and problems
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and other measuring equipment
  - measure and calculate length, area and volume
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of electric over hydraulic control systems, including the use of:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- specialised tools and equipment
- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing electric over hydraulic control systems
- legislation and regulatory requirements
- dangers of working with electric over hydraulic control systems
- application, purpose and operating principles of electric over hydraulic control systems
- testing procedures for electric over hydraulic control systems
- repair procedures for electric over hydraulic control systems
- post-repair testing procedures for electric over hydraulic control systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of electric over hydraulic control systems
- diagnose and repair electric over hydraulic control systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with electric over hydraulic control systems relevant to the qualification being sought
- equipment appropriate for the testing of electric over hydraulic

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

control systems

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of electric over hydraulic control systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• electric over hydraulic control system diagnosis and repair methods, processes and equipment</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of electric over hydraulic control systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• electric over hydraulic control system service requirements and repair manuals.</li> </ul>
<b>Diagnosis options</b> may	<ul style="list-style-type: none"> <li>• isolation of faults</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"><li>• component inspection and evaluation.</li></ul>
<b><i>Fault</i></b> may include:	<ul style="list-style-type: none"><li>• hydraulic component faults</li><li>• electrical component faults.</li></ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"><li>• component repair procedures, including:<ul style="list-style-type: none"><li>• removal, replacement and adjustment procedures</li><li>• dismantle, repair, re-assembly and adjustment procedures.</li></ul></li></ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"><li>• hydraulic pressure checks</li><li>• electrical checks, such as voltage drop, resistance and current flow.</li></ul>

**Unit Sector(s)**

<b><i>Competency field</i></b>	Mechanical – Mobile Plant
<b><i>Unit sector</i></b>	Technical – Electrical and Electronic

**Custom Content Section**

Not applicable.

## AURKTX3001 Diagnose and repair powershift transmissions

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair powershift transmissions fitted to heavy vehicles. It involves diagnosing deviations from correct operation, repair operations of powershift transmissions and associated systems, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the powershift transmissions of heavy vehicles in the road transport, mining, construction, agricultural and other industrial environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a powershift transmission	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a powershift transmission	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a powershift transmission	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
  - coordinate work with site supervisor and other workers
  - report work outcomes and problems
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and other measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair powershift transmissions systems, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- computerised Technology
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing powershift transmissions
- legislation and regulatory requirements
- dangers of working with heavy vehicle powershift transmissions
- application, purpose and operating principles of heavy vehicle powershift transmissions
- testing procedures for powershift transmissions
- repair procedures for powershift transmissions
- post-repair testing procedures for powershift transmissions

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of powershift transmissions
- diagnose and repair heavy vehicle powershift transmissions according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements..

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with powershift transmission faults relevant to the qualification being sought
- equipment appropriate for the testing of heavy vehicle powershift transmissions

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of heavy vehicle powershift transmissions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• heavy vehicle powershift transmission diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of powershift transmissions</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• powershift transmission service requirements and repair manuals.</li> </ul>
<b>Diagnosis options</b> may	<ul style="list-style-type: none"> <li>• isolation of faults</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• component inspection and evaluation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• loss of drive</li> <li>• noisy transmission</li> <li>• poor shifting.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• assessment of shift quality</li> <li>• assessment of transmission noise</li> <li>• hydraulic pressure testing</li> <li>• mobile or stationary tests to evaluate transmission performance.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical - Transmission

**Custom Content Section**

Not applicable.

## AURKTX4003 Diagnose complex faults in mobile plant transmission systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in mobile plant transmission systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of transmission systems in the mobile plant environment.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning mobile plant transmission systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS)</b> requirements, equipment and system isolation requirements and personal protection needs are observed and applied throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in mobile plant transmission systems are identified and confirmed from direct and/or indirect evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to mobile plant transmission systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of mobile plant transmission systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to electric over hydraulic systems
- concepts, types, functions, operations and limitations of mobile plant transmission systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to mobile plant transmission systems
- testing procedures for mobile plant transmission systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

• EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• interpret workplace instructions and locate and apply information</li> <li>• apply safety requirements, including the use of personal protective equipment</li> <li>• identify and select appropriate diagnosis processes to be performed</li> <li>• complete diagnosis of complex faults on a minimum of three different mobile plant transmission systems with real or simulated faults</li> <li>• document and report outcomes and required actions of diagnosis of complex faults in mobile plant transmission systems.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles systems with real or simulated mobile plant</li> </ul>

## • EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

transmission system faults

- tools and equipment appropriate for the diagnosis of complex faults in mobile plant transmission systems
- technical reference information and workplace instructions..

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults*** may include:

- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- direct faults in input sensors, output actuators, wiring harness, computer systems, calibration or adjustment specifications
- component specifications, component assembly, component damage and system modifications
- indirect mechanical faults.
- mechanical and hydraulic system faults

***Tests*** may include:

- wiring and connector integrity
- operation and specification of input and output devices
- controlling electronic components and computers
- data interpretation and readings related to direct indirect and intermittent causes
- hydraulic systems testing
- electrical systems testing
- mechanical systems testing
- road test.

***Testing equipment*** may include:

- analogue and digital multimeters
- lab oscilloscopes
- scan tools
- test lights and test LEDs
- pulse generators
- manufacturer and component supplier testing equipment

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• pressure gauges</li></ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"><li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to mobile plant transmission systems</li><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Mobile Plant
<b>Unit sector</b>	Technical – Transmission

**Custom Content Section**

Not applicable.

## AURKTX5002 Analyse and evaluate wheeled mobile plant transmission system faults

### Modification History

Release	Comment
Release 1	Replaces AURT572193A Analyse and evaluate wheeled mobile plant transmission system faults Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence to analyse and evaluate wheeled mobile plant transmission systems in order to initiate action to sustain, vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.  The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning wheeled mobile plant transmission systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Wheeled mobile plant transmission system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary wheeled mobile plant transmission systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- wheeled mobile plant terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance (including semi-conductors and electronic system applications).
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, functions, operations and limitations of wheeled mobile plant clutch systems/ components.
- detailed knowledge of the types, functions, operations and limitations of wheeled mobile plant torque converter systems/components.
- detailed knowledge of the types, functions, operations and limitations of wheeled mobile plant transmission systems/components.
- detailed knowledge of the types, functions, operations and limitations of wheeled mobile plant driveline systems/ components.
- detailed knowledge of the types, functions, operations and limitations of wheeled mobile plant

## **REQUIRED SKILLS AND KNOWLEDGE**

- differential systems/ components.
- detailed knowledge of the types, functions, operations and limitations of wheeled mobile plant final drive systems/ components.
- general knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three wheeled mobile plant transmission systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for wheeled mobile plant transmission systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, wheeled mobile plant transmission systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

<b>EVIDENCE GUIDE</b>	
	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstance.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Wheeled mobile plant</b>	Wheeled mobile plant covers all mobile plant other than that with tracked undercarriage. Included are loaders, dump trucks, graders, scrapers, industrial tractors, materials handling machines, agricultural harvesters and other rural equipment.
<b>Systems</b>	Transmission systems to be covered in this unit are to include mechanical, power shift and automatic transmissions with integrated computer controls and clutches, torque converters, drivelines, differentials and final drive sub-systems.
<b>System faults</b>	Transmission system faults covered by this unit are to include abnormal component wear, clutch operations, clutch pack slippage, contamination, driveline phasing and alignment, hard shifting, leaks, loose mountings, lubrication, modulation, noises, operating temperature, system pressures, torque converter slippage and vibrations.
<b>System failures</b>	Transmission system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria

<b>RANGE STATEMENT</b>	
	and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include computer-based diagnostic systems, micrometers, multimeters, pressure gauges, spring compression testers, tachometer, temperature gauges and verniers.
<b>Tests</b>	Tests to be conducted are to include component wear, lubricant sampling, operating temperature, pressure (torque converter and transmission pressure), torque converter stall, transmission clutch slippage, sensor integrity and function, wiring harness integrity, and diagnosis for module and parts replacement in related electrical and electronic control systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to wheeled mobile plant transmission systems.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Mobile Plant
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Transmission
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## AURLLD3001 Determine compliance of steering and suspension modifications

### Modification History

Release	Comment
Release 1	<p>Replaces AURT316316A Determine compliance of steering and suspension modifications</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to advise customers whether their proposed or actual steering and suspension modifications comply with Australian Design Rules for normal road usage.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, clarification of the customers' needs, the analysis of needs/proposals against Australian Design Rules requirements, recommendation as to a compliant plan of action and completion of work finalisation processes, including clean-up and documentation.</p> <p>The unit applies to steering and suspension systems fitted to a range of light vehicles, which includes 4WD vehicles and light commercial vehicles.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Clarify details of steering and suspension modifications	<ul style="list-style-type: none"><li>1.1. Confirmation is sought, through discussion with the customer, if steering and suspension modifications are actual or proposed</li><li>1.2. Reasons for modifications are discussed and confirmed with the customer</li><li>1.3. Modification specifications and dimensions are determined and documented</li><li>1.4. Non-standard steering and suspension components are identified</li></ul>
2. Determine specific Australian Design Rules information relating to steering and suspension modifications	<ul style="list-style-type: none"><li>2.1. Australian Design Rules bulletin applicable to modifications is identified</li><li>2.2. Section providing a ruling on the legality of modifications is identified</li><li>2.3. Any ruling against modifications is interpreted</li><li>2.4. Interpretation of the ruling made in relation to modifications is clarified and discussed with customer</li></ul>
3. Recommend a plan of action to achieve customer requirements	<ul style="list-style-type: none"><li>3.1. Implications of non-compliance with a specific Australian Design Rules is discussed with the customer</li><li>3.2. Suitable plan of action to meet Australian Design Rules requirements is discussed and clarified with customer</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage)
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to determining compliance of steering and suspension modifications, including the use of measuring equipment, electronics, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- purpose and format of Australian Design Rules
- contents of Australian Design Rules relative to steering and suspension systems
- enterprise procedures for determining compliance or non-compliance
- enterprise procedures for making recommendations to resolve non-compliance situations
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- completing preparatory activity in a systematic manner
- locating and interpreting Australian Design Rules in relation to a customer suspension modifications
- discussing Australian Design Rules interpretations at an understandable level with customer
- making recommendations to avoid non-compliance situations
- recommending a plan of action to provide a compliant response to customer's needs

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to determining compliance of steering and suspension modifications
- equipment and tooling appropriate to determining compliance of steering and suspension modifications
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Steering and suspension modification</b>	Types of steering and suspension modification may include lowered or raised normal ride heights, increased track width, variations between front and rear ride heights and reductions in ground clearance due to fitting non-standard components
<b>Work requirements</b>	<ul style="list-style-type: none"> <li>• Work involves ability to access technical information from published Australian Design Rules bulletins and interpret the content applicable to a customer specific steering and suspension modifications</li> <li>• Work includes ability to be able to explain in 'easy to understand terms' mandatory requirements to customer and be able to discuss implications of non-compliance findings</li> <li>• Competence may be demonstrated in a variety of workplaces involved with specific steering and suspension procedures, such as: service stations, dealerships, road-side repairers and automotive after-market specialists</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement and working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company

<b>RANGE STATEMENT</b>	
	quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include road springs, shock absorbers, sway bars and bump stops
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to determining compliance of steering and suspension modifications</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURLTA1001 Apply automotive mechanical system fundamentals

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to demonstrate basic knowledge and awareness of automotive terminology and mechanical terms and principles as they apply to vehicle mechanical systems, components and technologies found in modern motor vehicles.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to light vehicles and is based on demonstrating knowledge of systems and components function, location and operation, as well as an understanding of basic automotive mechanical terminology.</p> <p>Applying knowledge of fundamental operating principles of vehicular mechanical systems, including internal combustion engines, vehicular drivetrain, braking, suspension and steering systems and technologies forms the basis of this unit.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify mechanical fundamentals	<p>1.1.Suitable relevant <i>sources of information</i> are located to assist with mechanical fundamentals research</p> <p>1.2.General automotive mechanical system fundamentals are identified in relation to modern vehicle platforms</p> <p>1.3.Mechanical terminology and operating principles of systems and components are referred to and identified for a particular application</p>
2. Identify operation of system or component	<p>2.1.Component or system to be researched is identified</p> <p>2.2.Information is researched to ensure sufficient understanding of component or system to assist with its further identification and application</p> <p>2.3.Potential for unsafe conditions or <i>safety hazards</i> is identified</p>
3. Locate system or component on vehicle	<p>3.1.Suitable <i>automotive systems and components</i> are sourced to assist with task</p> <p>3.2.Location of system or component is confirmed in relation to modern vehicle configuration</p>
4. Apply mechanical fundamentals	<p>4.1.<i>Workplace health and safety (WHS) requirements</i> are observed and applied throughout the work</p> <p>4.2.System or component is examined and sub-assembly components are identified</p> <p>4.3.Method of operation is determined to confirm principles of system or component function</p> <p>4.4.System or component relationship to light vehicle operation is determined</p> <p>4.5.Potential <i>common faults</i> with system or component are identified</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - communicate ideas and information in verbal and written report
  - use questioning and active listening skills, e.g. when clarifying information
- initiative and enterprise skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand workplace safety-related procedures
  - read and follow information in written instructions, specifications and other applicable reference documents
- numeracy skills to use and communicate basic mathematical ideas and techniques that relate to automotive systems and components
- planning and organising skills to:
  - identify risk factors
  - plan and organise activities that implement and follow standard procedures
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as workplace safe operating procedures
- technical skills to:
  - collect, organise and understand technical information relating to:
    - recognising and reporting unsafe situations
    - automotive components and systems identification, location and function
  - select tools and equipment appropriate to the task
  - safely use workplace tools and equipment when applying mechanical fundamentals
- technology skills to use information technology equipment to assist with research

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- methods of sourcing information relevant to mechanical systems
- types, functions, location and basic operation of major vehicle systems and components, including basic automotive mechanical terminology
- common faults of major vehicle systems and components



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- identify automotive mechanical systems and components
- source relevant technical information
- locate mechanical systems and components on modern motor vehicles
- explain the function of at least three major systems of a modern motor vehicle
- demonstrate basic knowledge of possible causes of faults or problems with vehicle systems.

##### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- technical reference information
- a range of functioning automotive systems and components
- vehicles relevant to the qualification being sought
- automotive tools and equipment

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- personal protective equipment and workplace safety equipment.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Sources of information</i></b> may include:	<ul style="list-style-type: none"> <li>• vehicle workshop manuals</li> <li>• service bulletins</li> <li>• automotive texts</li> <li>• magazine technical articles</li> <li>• written instructions</li> <li>• documented workplace procedures.</li> </ul>
<b><i>Safety hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• electricity and water</li> <li>• toxic substances</li> <li>• broken or damaged equipment</li> <li>• flammable materials and fire hazards</li> <li>• lifting practices</li> <li>• spillages.</li> </ul>
<b><i>Automotive systems and components</i></b> may include:	<ul style="list-style-type: none"> <li>• engine systems</li> <li>• transmissions and drivetrains</li> <li>• steering and suspension systems</li> <li>• fuel systems</li> <li>• cooling systems</li> <li>• braking systems</li> <li>• exhaust systems.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Hand tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hammers</li> <li>• screwdrivers</li> <li>• wrenches</li> <li>• sockets and accessories</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• pliers</li> <li>• specialist tools for component removal or adjustment.</li> </ul>
<i>Common faults</i> may include:	<ul style="list-style-type: none"> <li>• failure to achieve ignition and power</li> <li>• failure to achieve fuel flow</li> <li>• excessive exhaust smoke or noise</li> <li>• unusual engine noises or vibrations</li> <li>• excessive play or vibration through steering</li> <li>• loss of coolant</li> <li>• slow response or excessive pedal travel when braking</li> <li>• system or component fluid or gas leakage.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical –Light Vehicle
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURLTB3003 Diagnose and repair light vehicle hydraulic braking systems

### Modification History

Release	Comment
Release 1	Replaces AURT310166A Repair hydraulic braking systems Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair hydraulic braking systems fitted to light vehicles. It involves identifying and confirming safety requirements, diagnosing deviations from correct operation, repairing light vehicle braking system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the braking systems of light vehicles, four-wheel drive and light commercial vehicles. This unit does not apply to work related to antilock braking systems (ABS) or to air braking systems.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a light vehicle braking system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a light vehicle braking system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a light vehicle braking system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
- clarify **workplace instructions and determine job requirements**
- **gain information** from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- technical skills to use workplace tools relating to the repair of light vehicle braking systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to light vehicle braking systems, including:
  - lifting and supporting procedures for light vehicles
  - dangers of working with brake dust and brake fluid
- operating principles of light vehicle braking systems
- application, purpose and operation of light vehicle braking systems
- testing procedures for light vehicle braking systems
- repair procedures for light vehicle braking systems
- post-repair testing procedures for light vehicle braking systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of light vehicle hydraulic braking systems, including disc brake and drum brake systems
- diagnose and repair light vehicle hydraulic braking systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- light vehicles with hydraulic braking faults relevant to the qualification being sought
- equipment appropriate for the testing of light vehicle hydraulic

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

braking systems

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of light vehicle hydraulic braking systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• light vehicle braking system diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of light vehicle braking systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• light vehicle service requirements and repair manuals.</li> </ul>
<b><i>Diagnostic tests</i></b> may	<ul style="list-style-type: none"> <li>• friction material wear</li> <li>• brake drum component serviceability</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"><li>• disc brake component serviceability</li><li>• vehicle braking efficiency.</li></ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"><li>• poor braking performance</li><li>• worn, damaged or badly-adjusted components.</li></ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"><li>• removal, replacement and adjustment procedures</li><li>• dismantle, repair, re-assembly and adjustment procedures.</li></ul>
<b><i>Post-repair</i></b> testing may include:	<ul style="list-style-type: none"><li>• mobile or stationary tests to evaluate braking system performance.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical – Brakes

**Custom Content Section**

Not applicable.

## AURLTB4001 Overhaul braking system components (light)

### Modification History

Release	Comment
Release 1	<p>Replaces AURT410145AA Overhaul braking system components (light)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out an overhaul of hydraulic, mechanical, vacuum and power assisted, and electric light braking system components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of the work requirement, preparation for work, overhauling of braking system components, conducting of serviceability tests on components, preparing brake components for use or storage and completion of work finalisation processes, including clean-up and documentation</p> <p>This unit of competence applies to light vehicles, motorcycles, trailers, caravans and outdoor power equipment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul braking system components	1.1. Nature and scope of the work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals, specifications and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for overhaul are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with stored energy as in emergency braking actuators are observed 1.7. Dangers working with brake dust and preventative measures are observed
2. Overhaul braking system components/sub-assemblies	2.1. Information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Braking system components are overhauled using approved methods, equipment and materials, in accordance with manufacturer/component supplier specifications 2.3. Overhaul of braking system components/sub assemblies is completed without causing damage to any component or system 2.4. All braking systems component overhaul activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
3. Conduct serviceability tests on components	3.1. Methods for the conduct of the test is implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2. Observations on the performance of the components is noted during the test 3.3. A determination is made as to the serviceability of components 3.4. Failed components are tagged for rework 3.5. Documentation of observations are completed
4. Prepare brake components for use and/or storage	4.1. Inspection is made to ensure safety features are in place 4.2. Final inspection is made to ensure work is to workplace expectations 4.3. Brake components are presented for use or stored to

ELEMENT	PERFORMANCE CRITERIA
	workplace expectations 4.4.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use workplace technology related to the overhaul of light braking system components, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- health hazards working with brake dust
- hydraulic principles
- operating principles of light braking systems and their components
- overhaul procedures
- test procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the overhaul of a range of braking system components in accordance with workplace and manufacturer/component supplier requirements
- interpreting test results
- completing the work within workplace timeframes
- presentation/storage of brake components in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the overhaul of light vehicle braking systems
- equipment, hand and power tooling appropriate to the overhaul of light vehicle braking systems
- activities covering the mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

	<p>performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Actuating mechanisms</b>	Actuating mechanisms may include fluid operated, mechanically operated, power assisted, anti-lock brake systems, computer systems, dual braking systems and anti-dive systems
<b>System components</b>	System components may include disc pads, master cylinders, brake shoes, brake callipers, brake hoses, brake actuators, mechanical devices and hydraulic valves
<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental</b>	Environmental requirements are to include but are not limited to

<b>RANGE STATEMENT</b>	
<b>requirements</b>	waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for removal/adjustment, lifting and supporting equipment, brake dust extraction equipment, measuring instruments and overhaul machining equipment
<b>Materials</b>	Materials may include spare parts, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the overhaul of light vehicle braking systems</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURLTB4004 Diagnose complex faults in light vehicle braking systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in light vehicle braking systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of braking systems of light vehicles, four wheel drive and light commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning light vehicle braking systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in light vehicle braking systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to light vehicle braking systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of light vehicle braking systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electrical and electronic systems related to light vehicle braking systems
- types, functions, operations and limitations of light vehicle braking systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to light vehicle braking systems
- testing procedures for light vehicle braking systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different light vehicle braking systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in light vehicle braking systems.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated light vehicle

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

braking system faults

- tools and equipment appropriate for the diagnosis of complex faults in light vehicle braking systems
- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations</li> <li>• direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications</li> <li>• component specifications, component assembly, component damage and system modifications</li> <li>• mechanical and hydraulic system faults.</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>• wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes</li> <li>• brake fluid testing</li> <li>• on-road braking efficiency testing</li> <li>• component test.</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• decelerometer or brake test meter</li> <li>• brake fluid tester</li> <li>• ABS sensor tester</li> <li>• analogue and digital multimeters, lab oscilloscopes, scan tools, test lights and test LEDs</li> <li>• pulse generators</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• manufacturer/component supplier testing equipment.</li></ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"><li>• analysing manufacturer/component supplier specifications, schematics and operational procedures related to braking systems</li><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical – Brakes

**Custom Content Section**

Not applicable.

## AURLTB5002 Analyse and evaluate light vehicle braking system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT570393A Analyse and evaluate light vehicle braking system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate light vehicle braking systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations.</p> <p>It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning light vehicle braking systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Light vehicle braking system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary light vehicle braking systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- light vehicle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic theory covering electrics, hydraulics, friction, mechanical advantage, levers, heat, pressure and area.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and electrical braking systems, including performance and balance.
- functions of brake fluid.
- detailed knowledge of the types, functions, operations and limitations of light vehicle braking systems/components.
- detailed knowledge of the types, function, operations and limitations of abs braking systems/components.
- detailed knowledge of the Australian Design Rules requirements related to light vehicle braking.
- working knowledge of the types, function, operations and limitations of light vehicle air braking (multiple trailer) systems/components.

**REQUIRED SKILLS AND KNOWLEDGE**

- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of automotive digital computing systems.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three light vehicle braking systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for light vehicle braking systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, light vehicle braking systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure and analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Vehicles</b>	Light vehicles are to include two wheel and four wheel drive vehicles.
<b>Braking systems</b>	Braking systems to be covered in this unit are to include disc, drum, ABS, AJPB, brake by wire and ceramic brakes.
<b>Drum brakes</b>	Drum brakes are to include leading/trailing, twin leading, duo servo, multiple shoe variations, cast iron and aluminium brake drums.
<b>Park brakes</b>	Park brakes are to include hand, foot, electric and Banksia type.
<b>Electronic systems</b>	Electronic systems are to include anti-lock braking systems and brake by wire.
<b>Braking system failures</b>	Braking system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.

<b>RANGE STATEMENT</b>	
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	<ul style="list-style-type: none"><li>• Testing equipment is to include decelerometer, electronic brake fluid analyser, multimeter, data scanner, oscilloscopes, pressure gauges, vacuum gauge, brake tester.</li><li>• Testing equipment may include a chassis dynamometer.</li></ul>
<b>Tests</b>	<ul style="list-style-type: none"><li>• Tests to be conducted are to include performance, brake fluid boiling point, rotor and drum wear, pad and lining thickness, brake pedal travel, handbrake mechanism travel, NVH, directional control and ABX operation and performance.</li><li>• Tests may include braking during cornering, friction material wear rate, and disc drum and rotor temperature.</li></ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"><li>• Workplace procedures relating to the use of tooling and equipment.</li><li>• Workplace procedures relating to reporting and communication.</li><li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to light vehicle braking systems.</li><li>• Australian Design Rules.</li><li>• Vehicle industry regulations.</li><li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURLTD3001 Select and install performance enhanced suspension system products

### Modification History

Release	Comment
Release 1	<p>Replaces AURT316168A Select and install performance enhanced suspension system products</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to select and install performance enhanced products to light vehicle suspension systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work involves selecting products to suit a customer's proposed suspension system modification requirements. It also includes removal of existing components, installation of new products and suspension system adjustments.</p> <p>The unit applies to suspension system configurations fitted to light vehicles, which may include 4WD vehicles, light commercial vehicles and off-road and motorsport vehicles.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify customer requirements and assess for practicality and safety compliance	1.1. Purpose for proposed modifications are established and confirmed with the customer 1.2. Practicality of the customer requirements are assessed and discussed with the customer 1.3. Proposed modifications are assessed in relation to safety and Australian Design Rules compliance 1.4. Project parameters, including cost and timeframe considerations, are discussed and confirmed with the customer 1.5. Vehicle is road tested to ensure proposed modifications are relevant and the condition of the vehicle is appropriate to safely incorporate performance enhanced products 1.6. Written quote is prepared to be authorised by the customer according to enterprise procedures
2. Prepare vehicle for modifications	2.1. Suspension system components needed for project are sourced and ordered 2.2. Service information is accessed and interpreted prior to commencing removal procedures 2.3. Vehicle is road tested to confirm roadworthiness prior to commencing component removal procedures
3. Fit components and make suspension system adjustments	3.1. Original components are removed and stored according to customer requirements or enterprise disposal procedures 3.2. New components are inspected to confirm serviceability of use prior to installation 3.3. New components are installed according to manufacturer/component supplier instructions and enterprise guidelines 3.4. Fluids and lubricants are added to components according to manufacturer/component supplier guidelines and enterprise procedures 3.5. Suspension system adjustments are completed according to manufacturer/component supplier specifications
4. Road test vehicle, make final adjustments and complete documentation	4.1. Vehicle is road tested to ensure compliance with project intent 4.2. Suspension system is inspected to confirm it is free of leaks and other malfunctions 4.3. Final adjustments are completed 4.4. Vehicle is road tested with the customer to confirm acceptance of work carried out 4.5. Documentation relating to the work carried out is completed

ELEMENT	PERFORMANCE CRITERIA
	and distributed/filed according to enterprise procedures
5. Clean up work area	<p>5.1. Material that can be reused is collected and stored according to enterprise procedures</p> <p>5.2. Equipment used in the job tasks is cleaned and returned to designated locations in the workplace</p> <p>5.3. Work area is cleaned and inspected for serviceable and safe working conditions according to enterprise requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collecting, analysing and organising information from a variety of sources to ensure the performance enhanced products are selected to achieve the customer's proposed modifications
- discussing job card requirements and desired vehicle performance characteristics with the customer
- following removal, refitting and adjusting procedures in a planned sequence as in workshop manuals and other technical publications to achieve desired system modifications within efficient timeframes
- selection and fitting of specialised products requires cooperative working arrangements with colleagues and supervision relating to sharing of specialist equipment, sharing of technical knowledge and procurement of specialist parts
- applying basic mathematical techniques when converting specification details to the processes of adjustment procedures and dimension recording
- establishing safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- using workplace technology related to the selection and installation of performance enhanced suspension system products, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- operating principles of various suspension systems and major components
- how specific performance enhanced suspension products affect suspension system and driving characteristics
- enterprise product ordering procedures
- component removal, refitting and adjusting procedures
- road test principles and procedures
- methods of using lubricants and sealants
- methods of fitting gaskets and circlips
- methods of interpreting results from specific testing equipment (eg shock absorber tester)
- how to access information from a computer
- methods of effectively requesting advice or additional information from others in the workplace
- effective communication techniques with customers

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Applying and using safety equipment and items of PPE
- Selecting and fitting performance enhanced suspension system products to suit a customer requirements
- Following task instructions, operating procedures and approved inspection processes to:
  - minimise risk of injury to self and others
  - prevent damage to workshop equipment and customer vehicles
  - achieve outcomes within quoted timeframes quality standards
- Applying safe work practices
- Correctly interpreting and communicating technical information
- Applying safe and effective vehicle road testing techniques
- Correctly completing workplace documentation
- Working with and around other team members
- Working effectively with others
- Modifying work activities to cater for variations in workplace context and environment

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

Assessment is to be conducted without additional assistance from supervision or other work colleagues except where it is normal practice to consult or clarify with others on matters pertinent to specific job tasks

Information accessed by an external assessor during assessment procedures, which is derived from enterprise policies and practices, must be treated as commercial-in-confidence and not passed on to unauthorised persons

The following resources should be made available:

## EVIDENCE GUIDE

	<ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the selection and installation of performance enhanced suspension system products</li> <li>• equipment, hand and power tooling appropriate to the selection and installation of performance enhanced suspension system products</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul> <p>Candidate for assessment should be able to access resources to complete job tasks if they are deemed part of normal workplace job requirements. However, if assessment is to be conducted in a simulated work environment, resources must be provided but with additional verbal questioning to confirm how the candidate would access these resources in the workplace</p>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>Assessment of workplace outcomes performance must only take place after a sufficient period of supervised practice and repetitive experience</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS</b>	WHS requirements include WHS legislation, safety management systems, hazardous substances and dangerous goods code, enterprise safe operating procedures and Australian Design Rules
<b>Modifications</b>	Modifications refer to suspension system components which have been altered from the standard manufacturer design either in material, shape, specification or adjustments according to an aftermarket component manufacturer with the intent of enhancing or improving the function of the standard suspension system
<b>Legislative requirements</b>	Work is carried out in accordance with legislative obligations, environmental legislation, WHS regulations, manual handling and lifting equipment procedures and enterprise insurance requirements
<b>Work requirements</b>	<ul style="list-style-type: none"> <li>• Work involves being able to correctly select and install products which will address the requirements of the customer and ensuring the customer is conversant with the altered ride and handling characteristics of their vehicle</li> <li>• Work also involves the ability to discuss requirements of the customer at a suitable technical level that does not intimidate or confuse the customer. It also includes being able to access technical information from workshop manuals, technical bulletins and manufacturer/component supplier publications of performance enhanced suspension system products to assist the customer to understand how their requirements may be achieved</li> </ul>
<b>Proposed modifications</b>	<p>Types of proposed modifications may include:</p> <ul style="list-style-type: none"> <li>• modified spring rates</li> <li>• modified shock absorbers and struts</li> <li>• modified sway bars</li> <li>• modified suspension bushes</li> <li>• modified torsion bars</li> <li>• removal of factory fitted electronic suspension systems and replacement with non-electronic components</li> </ul>
<b>Project parameters may include:</b>	<p>Project parameters may include:</p> <ul style="list-style-type: none"> <li>• whether work will be carried out in phases</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• requesting specific persons to carry out the work</li> <li>• using specific manufacturer/component supplier products</li> <li>• variation to product final adjustments</li> </ul>
<b>Suspension system components</b>	<p>Suspension system components may include:</p> <ul style="list-style-type: none"> <li>• shock absorbers and struts</li> <li>• coil springs</li> <li>• leaf springs</li> <li>• torsion bars</li> <li>• panhard rods</li> <li>• suspension bushes</li> <li>• bump stops</li> <li>• dust boots</li> <li>• shackle and sway bar bushes</li> <li>• ball joints</li> </ul>
<b>Service information</b>	<p>Service information may include:</p> <ul style="list-style-type: none"> <li>• workshop manuals</li> <li>• product manufacturer/component supplier specifications and guidelines</li> <li>• enterprise service information</li> <li>• customer product information</li> </ul>
<b>Suspension system adjustments</b>	<p>Suspension system adjustments may include:</p> <ul style="list-style-type: none"> <li>• setting adjustable shock absorbers</li> <li>• wheel hub bearing adjustments</li> </ul>
<b>Types of malfunctions</b>	<p>Types of malfunctions may include distorted suspension system components such as:</p> <ul style="list-style-type: none"> <li>• upper and lower control arms</li> <li>• struts</li> <li>• front cross member</li> <li>• rear axle housing</li> <li>• trailing arms</li> <li>• missing split pins</li> </ul>
<b>Types of documentation</b>	<p>Types of documentation may include:</p> <ul style="list-style-type: none"> <li>• enterprise job cards</li> <li>• customer vehicle history database</li> <li>• product warranties</li> <li>• computerised invoicing system</li> </ul>

## Unit Sector(s)

Unit sector	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURLTD3002 Service and rectify faults in lift assisted suspension systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT316171A Service and rectify faults in lift assisted suspension systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out specific servicing procedures and to locate and rectify faults in various types of lift assisted suspension systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and servicing of systems, rectification of system faults, final testing of the system and completion of work finalisation processes including clean-up and documentation.</p> <p>Work involves servicing various types of lift assisted suspension systems and rectifying faults identified during the servicing procedures.</p> <p>The unit applies to all types of lift assisted suspension systems fitted to light vehicles which may include 4WD and light commercial vehicles.</p> <p>Work requires individuals to demonstrate judgment and problem-solving skills in managing work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements including method, process and equipment 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal safety needs, are observed throughout the work activity 1.4. Equipment and tooling are identified and checked for safe and effective operation 1.5. Procedures are determined to minimise task time
2. Service lift assisted suspension systems	2.1. Service information is accessed and interpreted prior to commencing servicing procedures 2.2. Current status and previous fault history of lift assisted suspension system is determined in conjunction with customer 2.3. Current status of lift assisted suspension system is confirmed through a road test program 2.4. Lift assisted suspension system is serviced in accordance with manufacturer/component supplier specifications and enterprise procedures 2.5. Fluids and lubricants are used in accordance with WHS and manufacturer/component supplier specifications 2.6. Used fluids and lubricants are disposed of according to enterprise and WHS procedures
3. Rectify lift assisted suspension system faults	3.1. Road test results are interpreted to verify system fault diagnosis 3.2. The customer is notified of fault(s) which are discussed to obtain agreement to carry out work 3.3. Faulty components are removed and replaced with approved replacement parts in accordance with workplace procedures and customer requirements 3.4. Faulty components are disposed of in accordance with workplace procedures and warranty requirements 3.5. System adjustments are completed relevant to components replaced
4. Test and confirm system faults have been rectified	4.1. Test procedures are carried out to confirm rectification of system faults 4.2. Outcomes of rectification work are explained to the satisfaction of the customer to enable invoicing/documentation to be completed 4.3. Documentation is completed in accordance with workplace/

ELEMENT	PERFORMANCE CRITERIA
	customer requirements
5. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>5.1. Material that can be reused is collected and stored</li><li>5.2. Waste and scrap is removed following workplace procedure</li><li>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</li><li>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements</li><li>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and workplace procedures</li><li>5.6. Tooling and equipment is maintained in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collecting information from a variety of sources to ensure the major component can be serviced to achieve the manufacturer/component supplier intent
- discussing job card requirements and vehicle symptoms with the customer
- following up fault diagnosis outcomes, which may also require ongoing consultation with the customer to confirm a course of repair action
- servicing and fault rectification procedures need to be followed in a set order as specified in workshop manuals and other technical publications to achieve a serviceable outcome within efficient timeframes
- the servicing of components requires cooperative working arrangements with colleagues and supervision relating to sharing of specialist equipment, sharing of technical knowledge and the procurement of spare parts
- establishing safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- using mathematical ideas and techniques to correctly calculate time, assess tolerances, apply measurements, calculate material requirements and establish quality checks
- using workplace technology related to the servicing and rectification of faults in lift assisted suspension systems, including the use of specialist tools, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- principles of operation relating to various types of hydraulic and pneumatic lift assisted suspension systems
- construction and operation of major components
- system testing procedures
- servicing procedures
- road-testing techniques
- fault diagnostic methods and procedures
- methods of accessing and interpreting manufacturer/ component supplier specification charts
- enterprise procedures for reporting system faults and material defects
- safe methods of using lubricants and sealants
- methods and techniques for using specific precision measuring tools
- methods of using and interpreting results from specific test equipment
- enterprise and customer documentation

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved or affected by the work
- selection methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing fault diagnosis and analysis
- completing servicing and fault rectification procedures to workplace and manufacturer/component supplier requirements
- completing work within workplace timeframes
- presentation of equipment to customer in compliance with workplace requirements
- correctly completing job documentation

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements including specified Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to servicing and rectification of faults in lift assisted suspension systems
- equipment, hand and power tools appropriate to servicing and rectification of faults in lift assisted suspension systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

	<p>performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Lift assisted suspension systems</b>	Types of lift assisted suspension systems may include hydraulic and pneumatic
<b>Road test programs</b>	Types of road test programs may include off-road terrain, highway, city and proving ground facilities
<b>Test procedures</b>	Types of test procedures to confirm fault rectification may include shock absorber testing
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but may not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations including Australian Standards, internal enterprise quality policy and standards and enterprise operations and

<b>RANGE STATEMENT</b>	
	procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load testing devices, computerised diagnostic equipment and shock absorber testers
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets and diagrams or sketches</li><li>• safe work procedures related to the servicing and rectification of faults in lift assisted suspension systems</li><li>• regulatory/legislative requirements pertaining to automotive industry including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external personnel</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURLTD3003 Reset steering system alignment adjustments to customer specifications

### Modification History

Release	Comment
Release 1	<p>Replaces AURT317172A Reset steering system alignment adjustments to customer specifications</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to carry out vehicle alignment pre-checks and to reset steering system alignment adjustments according to customer specifications.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit applies to alignment procedures relative to a range of light vehicles which may include 4WD vehicles, light commercial vehicles and various types of motorsport vehicles.</p> <p>Work involves resetting wheel alignment adjustments to achieve non-standard specifications according to a customer's specifications.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to reset steering system alignment	<p>1.1. Work instructions are used to determine job requirements, including quality, material, equipment and quantities</p> <p>1.2. Job specifications are read and interpreted</p> <p>1.3. WHS requirements, including breathing protection, personal protection needs, are observed throughout the work</p> <p>1.4. Material for application is selected and inspected for quality</p> <p>1.5. Correct hand and power tooling are identified and checked for safe use</p> <p>1.6. Products are determined to minimise waste material</p> <p>1.7. Reasons for resetting alignment specifications to non-standard settings are discussed and clarified with customer</p>
2. Carry out alignment pre-checks	<p>2.1. Non-standard adjustment settings are confirmed as technically appropriate and are safe to carry out</p> <p>2.2. Modifications made to steering and suspension system are inspected to confirm they do not make the vehicle unroadworthy if it is designed for road use</p> <p>2.3. Serviceability status of components involved in alignment adjustments is confirmed</p> <p>2.4. Vehicle is tested to confirm the serviceability of steering and suspension system</p>
3. Make alignment adjustments to achieve specifications	<p>3.1. Alignment equipment is safely connected to the vehicle according to enterprise work practices</p> <p>3.2. Wheel alignment measuring equipment is used in a safe manner in accordance with manufacturer/component/ supplier/enterprise instructions and work practices</p> <p>3.3. Alignment adjustments are completed without causing damage to system components and/or alignment equipment</p> <p>3.4. Any alignment problems are notified and discussed with the customer prior to rework being carried out</p> <p>3.5. Vehicle is tested to confirm customer requirements have been achieved</p>
4. Complete documentation and vehicle history	<p>4.1. Alignment adjustment data is entered in customer's vehicle history file(s)</p> <p>4.2. Customer documentation is completed and</p>

ELEMENT	PERFORMANCE CRITERIA
records	confirmed
5. Clean up work area and maintain equipment	5.1. Material that can be reused is collected and stored 5.2. Waste and scrap is removed following workplace procedures 5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures 5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace 5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures 5.6. Tooling is maintained in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- methods of accessing and interpreting manufacturer/ component supplier standard wheel alignment specifications
- principles of steering geometry, including 4WS
- implications of making non-standard alignment settings on driving and ride characteristics
- procedures for using specific enterprise wheel alignment equipment
- methods of effectively road testing a vehicle before and after wheel alignment procedures
- enterprise and customer documentation
- work organisation and planning processes

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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| <ul style="list-style-type: none"><li>• enterprise quality processes</li></ul> |
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## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• completing a range of steering system alignment procedures according to specifications</li> <li>• completing workplace records</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the resetting of steering system alignment adjustments</li> <li>• equipment, hand and power tooling appropriate to the resetting of steering system alignment adjustments</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and</p>

## EVIDENCE GUIDE

accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### **Resetting alignment specifications**

Reasons for resetting alignment specifications to non-standard settings may include:

- for off-road use
- vehicle ride height is altered
- non-standard wheel and tyre combinations fitted
- variations to amounts of oversteer or understeer
- for specific motorsport requirements

#### **Steering and suspension modifications**

Types of steering and suspension modifications may include:

- modified road springs
- revised shock absorbers
- modified sway bar (stabiliser bar) fitted
- altered ride heights
- types of alignment adjustments may include:
- camber
- caster
- toe-in or toe-out
- scrub radius

#### **Alignment equipment**

Alignment equipment may include:

- two head alignment equipment
- four head alignment equipment

#### **Vehicle history data**

Types of vehicle history data may include:

- information derived from customer
- computer vehicle history files
- customer vehicle history data files (hard copy version)

#### **WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, machine hygiene, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, diagnostic and monitoring systems, meters, gauges, load testing devices, and pulling and pushing devices
<b>Materials</b>	Materials may include spare parts, lubricants,

RANGE STATEMENT	
	fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the resetting of steering system alignment adjustments</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURLTD3004 Repair steering systems (light vehicle)

### Modification History

Release	Comment
Release 1	Replaces AURTL315166A Repair steering systems (light vehicle) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out repairs to light vehicle steering systems and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, tests and analysis of results, completion of repairs and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to the following:</p> <ul style="list-style-type: none"><li>• light vehicles and outdoor power equipment.</li></ul> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repair of steering system	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or operational requirements for inspecting and repairing steering systems are sourced and support tooling and equipment are identified and prepared</p> <p>1.6.Warnings in relation to working with wheeled and tracked vehicles are observed</p>
2. Conduct test and analyse results	<p>2.1.Methods for steering system tests are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>2.2.Inspection/test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Carry out repairs	<p>3.1.Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.Adjustments, including wheel bearing adjustments are made during the repair are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle/ equipment for customer and/or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- operating principles of mechanical and power assisted steering systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)

**REQUIRED SKILLS AND KNOWLEDGE**

- dangers of working with vehicles
- steering systems testing and adjusting procedures
- steering systems repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting test results
- completing repair to a range of steering systems to manufacturer/component supplier requirements
- completing repairs within workplace timeframes
- vehicle/equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of steering systems
- equipment, hand and power tooling appropriate to the repair of steering systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE****Package**

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Repair of steering systems and equipment

Repair of steering systems and equipment may include:

- component and/or system adjustments
- ball joints, struts, idler arms, steering boxes, steering columns, steering racks
- electronic controlled systems and two and four wheel steer
- power assisted steering

#### Repair methods

Methods are to include:

- operational testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, wear)
- principles, angles and geometry of vehicle wheel alignment

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to

<b>RANGE STATEMENT</b>	
	others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, testing equipment and devices, including camber, caster, KPI and toe out on turns measuring systems
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of steering systems</li> <li>• regulatory/legislative requirements pertaining</li> </ul>

**RANGE STATEMENT**

	<p>to automotive industry, including Australian Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Light Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURLTD3005 Repair suspension systems (light vehicle)

### Modification History

Release	Comment
Release 1	Replaces AURTL316166A Repair suspension systems (light vehicle) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the repairs to suspension systems and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspections/testing and analysis of outcomes and completion of repair actions and work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• light vehicles and outdoor power equipment</li></ul> <p>Work involves wheeled vehicles, including chain drive vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repairs to suspension systems and associated components	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or measurement requirements for suspension systems are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with wheeled are observed</p>
2. Conduct inspection/test and analysis	<p>2.1.Methods for inspection/test procedures and manufacturer/ component supplier specifications</p> <p>2.2.Inspection/test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Carry out repairs	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for repair are identified and support equipment is identified and prepared</p> <p>3.4.Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.5.Adjustments made during the repair are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle for use or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards,</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- the types, characteristics, uses and limitations of commonly encountered suspension systems
- dangers of working with equipment on chassis
- types and layout of service/repair manuals (hard copy and electronic)
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting inspection/test results
- conducting repair of a range of systems in accordance with manufacturer/component supplier and workplace requirements
- completing repairs within workplace timeframes
- vehicle/equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of suspensions systems
- equipment, hand and power tooling appropriate to the repair of suspensions systems
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment

**EVIDENCE GUIDE**

guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Suspension systems

- Suspension systems may be gas, hydraulic, pneumatic, mechanical or rubber suspension
- Suspension systems may include:
  - lateral and longitudinal arms, independent suspension
  - ball joints, rose joints
  - self-levelling device, ride control, height control

#### Repair methods

- Methods are to include:
- functional testing, pressure testing, electrical testing
  - visual, aural and functional assessments (including: damage, corrosion, fluid levels, fluid leaks, air leaks, wear, alignment)
  - adjustment of shock absorbers

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to

<b>RANGE STATEMENT</b>	
	others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load testing devices, computerised diagnostic equipment and shock absorber testers
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of suspension systems</li> <li>• regulatory/legislative requirements pertaining</li> </ul>

**RANGE STATEMENT**

	<p>to automotive industry, including Australian Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Light Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURLTD3006 Carry out wheel alignment operations (light vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTL317108A Carry out wheel alignment operations (light vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit identifies the competence required to carry out wheel alignment operations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, carrying out wheel alignment operations and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence should be contextualised to the qualification to which it is being applied.</p> <p>Wheel alignment operations may be for light vehicles and motorcycles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Carry out wheel alignment pre-checks	1.1.Information is gained from customer outlining handling characteristics and history 1.2.Nature and scope of work requirements are identified and confirmed 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Vehicle/equipment tests are performed to confirm need for alignment 1.5.Vehicle wheel alignment pre-checks are carried out in accordance with manufacturer/component supplier procedures and workplace requirements
2. Perform vehicle wheel alignment	2.1.Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2.Wheel alignment measuring equipment is connected to vehicle in accordance with manufacturer/component supplier specifications 2.3.Wheel alignment is completed without causing damage to any component or system 2.4.Corrective adjustments/repairs are carried out in accordance with manufacturer/component supplier specifications 2.5.Vehicle/equipment is tested to confirm accuracy of adjustments according to manufacturer/component supplier specifications and customer requirements 2.6.Wheel alignment testing and adjustment is carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies 2.7.Customer is notified of any major problem(s) prior to rework being carried out 2.8.Workplace documentation is completed and dealt with relevant to alignment outcomes
3. Complete documentation and service history documents	3.1.Service history is updated in accordance with workplace requirements 3.2.Before and after alignment measurements are documented and included in customer documentation 3.3.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operating principles of steering geometry and wheel alignment
- wheel alignment procedures
- relationships between fault symptoms and component defects
- frame alignment checks
- wheel alignment system types and their construction
- use of measuring tools and testing equipment
- use of hand tools and specialised equipment

**REQUIRED SKILLS AND KNOWLEDGE**

- pre-check procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Critical aspects of evidence

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- It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:
  - observing safety procedures and requirements
  - communicating effectively with others involved in or affected by the work
  - selecting methods and techniques appropriate to the circumstances
  - completing preparatory activity in a systematic manner
  - conducting the alignment of a range of wheels in accordance with workplace and manufacturer/component supplier requirements
  - accurately interpreting wheel alignment measurements
  - completing wheel alignment within workplace timeframes
  - vehicle/equipment is presented to customer in compliance with workplace requirements

#### Context of assessment

- Application of competence is to be assessed in the workplace or simulated worksite
  - Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
  - Assessment is to comply with regulatory requirements, including Australian Standards
- The following resources should be made available:
- workplace location or simulated workplace
- material relevant to wheel alignment operations
- equipment, hand and power tooling appropriate to wheel alignment operations
- activities covering mandatory task requirements

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</li> <li>• Assessment may be applied under project related conditions and require evidence of process</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li> </ul>
<b>Specific resource requirements for this unit</b>	

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Wheel alignment operations</b>	<p>Wheel alignment operations are to include one or more of the following systems:</p> <ul style="list-style-type: none"> <li>• rear wheel drive, front wheel drive</li> <li>• two and four wheel steer</li> <li>• single wheel steer</li> </ul>
<b>Methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>• chassis/underframe alignment checks</li> <li>• measurement and adjustment</li> <li>• road testing (before and after adjustments)</li> <li>• visual, aural and functional assessment (including: damage, corrosion, wear, measurement)</li> <li>• alignment equipment operation</li> <li>• string lining</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</p>

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tools and equipment may include hand tools, tyre gauge and/or specialist tooling for removal/adjustment, mechanical and/or electronic wheel alignment equipment, measuring equipment, lifting equipment, two head and four head wheel aligner
<b>Materials</b>	Materials may include minor parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to wheel alignment operations</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>requirements</li><li>instructions issued by authorised enterprise or external persons</li><li>Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Light Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURLTD4009 Diagnose complex faults in light vehicle steering and suspension systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in light vehicle steering and suspension systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic, hydraulic or pneumatic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of steering and suspension systems of light vehicles, four wheel drive and light commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <i>light vehicle steering and suspension systems</i> are accessed and interpreted</p> <p>1.3. <i>Workplace health and safety (WHS) requirements</i>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <i>faults</i> in light vehicle steering and suspension systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <i>tests</i> and testing process are identified and selected from the range of available options</p> <p>2.4. <i>Testing equipment</i> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <i>diagnostic processes</i> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to light vehicle steering and suspension systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of light vehicle steering and suspension systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to light vehicle steering and suspension systems
- concepts, types, functions, operations and limitations of light vehicle steering and suspension systems and components
- steering geometry, including:
  - caster
  - camber
  - steering axis inclination
  - toe-in and toe-out
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to light vehicle steering and suspension systems
- testing procedures of light vehicle steering and suspension systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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This section describes the skills and knowledge required for this unit.
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recommendations.
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different light vehicle steering and suspension systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in light vehicle steering and suspension systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated light vehicle steering

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

and suspension system faults

- tools and equipment appropriate for the diagnosis of complex faults in light vehicle steering and suspension systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Light vehicle steering and suspension systems</i></b> may include:	<ul style="list-style-type: none"> <li>• mechanical, power and electric steering systems</li> <li>• coil, spring, torsion bar and leaf-spring type suspension systems.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• tyre wear, driveability, vibration, directional stability, tracking, calibration and adjustment specifications, component specifications and component assembly</li> <li>• component damage and system modifications</li> <li>• erratic steering, mechanical damage, sub-frame alignment.</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>• ball-joint wear, camber, castor, leveller operation pitman arm specifications, ride height, steering access inclination, steering linkage specification, sub-frame alignment, thrust line, toe-in, toe-out turns, turning radius, tyre pressures, tyre tread and wheel bearing specification.</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• tape measure, tyre pressure gauge, string line, adjustable electronic bubble level</li> <li>• laser or computerised wheel alignment system.</li> </ul>
<b><i>Diagnostic processes</i></b> may include:	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to steering and suspension systems</li> <li>• six-step troubleshooting plan</li> <li>• discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical – Light Vehicle
Unit sector	Technical – Steering and Suspension

## Custom Content Section

Not applicable.

## AURLTD5007 Analyse and evaluate light vehicle steering and suspension system faults

### Modification History

Release	Comment
Release 1	Replaces AURT570093A Analyse and evaluate light vehicle steering and suspension system faults Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to analyse and evaluate light vehicle steering and suspension systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations.</p> <p>It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning light vehicle steering and suspension systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Light vehicle steering and suspension system components are prepared for the diagnostic process, including park-up, isolation and cleaning.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

## **REQUIRED SKILLS AND KNOWLEDGE**

### **Required skills**

- research, organise and understand technical information related to contemporary light vehicle steering and suspension systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

### **Required knowledge**

- light vehicle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetics and inductance.
- theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- steering system theory, including steering angles (camber, castor, steering axis inclination, toe-in and toe-out).
- functions of hydraulic pressure with steering and suspension systems.
- detailed knowledge of the types, function, operations and limitations of light vehicle manual steering, power steering and suspension systems/components.
- general knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three different light vehicle steering and suspension systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different light vehicle steering and suspension systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objectives for analysis and evaluation, light vehicle steering and suspension systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objectives, research facilities and technical information, and a work environment.

## EVIDENCE GUIDE

### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Vehicles</b>	Light vehicles are to include two-wheel and four-wheel drive vehicles.
<b>Steering systems</b>	Steering systems to be covered in this unit are to include mechanical and power.
<b>Steering failures</b>	Light vehicle steering failures covered by this unit are to include tyre wear, driveability, vibration, directional stability, tracking, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications.
<b>Suspension systems</b>	Suspension systems are to cover coil, spring and spring leaf types.
<b>Suspension system failures</b>	Light vehicle suspension system failures covered by this unit are to include erratic steering, mechanical damage, sub-frame alignment, component damage and systems modifications.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and</li> </ul>

<b>RANGE STATEMENT</b>	
	problem-solving skills in the diagnosis of faults.
<b>Evaluation criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include tape measure, tyre pressure gauge, string line, adjustable electronic bubble level and may include laser wheel alignment system.
<b>Tests</b>	Tests to be conducted are to include ball-joint wear, camber, castor, leveller operation pitman arm specifications, ride height, steering access inclination, steering linkage specification, sub-frame alignment, thrust line, toe-in, toe-out turns, turning radius left/right, tyre pressures, tyre tread and wheel bearing specification.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to light vehicle steering and suspension systems.</li> <li>• Australian design rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li> </ul>

## Unit Sector(s)

Unit sector	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURLTE2001 Remove and install light vehicle engine assemblies

### Modification History

Release	Comment
Release 1	Replaces AURT201164A Remove and install engine assemblies Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to remove and install engine assemblies fitted to light vehicles. It involves the identification of work requirements, preparation for work, removal of assemblies, installation of engine assemblies and completion of work finalisation processes, including cleaning and documentation, and post-installation testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the engine assemblies of motorcycles, light vehicles, four wheel drive and light commercial vehicles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove light vehicle engine assemblies	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to removing light vehicle engine assemblies</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Removal options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Warnings in relation to working with lifting and jacking equipment are observed</p>
2. Carry out the removal of light vehicle engine assemblies	<p>2.1. Engine assembly is removed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. <b>Observations</b> are noted and documented during the removal of engine assembly</p>
3. Install light vehicle engine assemblies	<p>3.1. <b>Installation options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools and equipment are selected and prepared</p> <p>3.3. Engine assembly is installed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p>
4. Carry out post-installation adjustments and tests	<p>4.1. <b>Post-installation adjustments</b> are carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>4.2. <b>Post-installation tests</b> are carried out according to workplace procedures and manufacturer and component supplier specifications</p>
5. Clean up work area and finalise work processes	<p>5.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>5.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>5.3. Workplace documentation is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret gauges, instruments and measuring equipment
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the removal and installation of light vehicle engine assemblies
- technology skills to use technology to collect and provide information

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with lifting and jacking equipment
- methods of disconnecting related systems, including:
  - air conditioning system
  - cooling system
  - electrical systems
  - exhaust system
  - fuel system
  - power steering system
  - transmission systems, including:
    - automatic transmission

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- manual transmission
- removal procedures for light vehicle engine assemblies, including:
  - correct use of lifting and supporting equipment
  - item tagging procedures
  - correct disposal methods of hazardous substances
- installation procedures for light vehicle engine assemblies
- post-installation testing and adjustment procedures for light vehicle engine assemblies, including:
  - pre-start procedures
  - operational testing and run-in procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- remove and install a range of light vehicle engine assemblies according to workplace, manufacturer and component supplier requirements
- present light vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- light vehicles and light vehicle engine assemblies
- tools and equipment appropriate for the removal and installation of light vehicle engine assemblies
- specifications and workplace instructions.

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• removal and installation methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the removal and installation of light vehicle engine assemblies</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> <li>• light vehicle service requirements and repair manuals.</li> </ul>
<b>Removal options</b> may	<ul style="list-style-type: none"> <li>• removal of the engine assembly alone or with the transmission assembly</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>removal with the engine attached to chassis.</li> </ul>
<i>Observations</i> may include:	<ul style="list-style-type: none"> <li>routing of system components</li> <li>damaged or faulty components</li> <li>components and parts required for engine installation.</li> </ul>
<i>Installation options</i> may include:	<ul style="list-style-type: none"> <li>installation of the engine assembly alone or with the transmission assembly</li> <li>installation with the engine attached to chassis.</li> </ul>
<i>Post-installation adjustments</i> may include:	<ul style="list-style-type: none"> <li>drive belts</li> <li>fluid level checks</li> <li>cable freeplay.</li> </ul>
<i>Post-installation tests</i> may include:	<ul style="list-style-type: none"> <li>stationary and mobile engine performance tests</li> <li>testing of associated systems, including:               <ul style="list-style-type: none"> <li>air conditioning system</li> <li>cooling system</li> <li>power steering system</li> <li>transmission system.</li> </ul> </li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical - Engines

**Custom Content Section**

Not applicable.

## **AURLTE3002 Repair engines and associated engine components (light vehicle)**

### **Modification History**

<b>Release</b>	<b>Comment</b>
<b>Release 1</b>	Replaces AURTL301166A Repair engines and associated engine components (light vehicle) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out repair of an engine and associated engine components on two and four stroke spark ignition and two and four stroke compression ignition engines.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, engine system testing and analysis, repair of engines and associated components and completion of work finalisation processes, including clean-up and documentation.</p> <p>For service and repair of outdoor power equipment engines and associated components see AURPTE2002 Service engines and associated engine components (outdoor power equipment).</p> <p>This unit of competence should be contextualised to the qualification to which it is being applied.</p> <p>Engines may include those for light vehicles, motorcycles and marine craft.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repair of engines	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks</p> <p>1.4.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.5.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6.Technical and/or calibration requirements for engine systems repair are sourced and support equipment is identified and prepared</p> <p>1.7.Warnings in relation to working with engines and associated systems are observed</p>
2. Conduct engine systems tests and analyse results	<p>2.1.Methods for engine systems tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Engine is started and run up to operating temperature and checked for leaks, abnormal noises and pressures</p> <p>2.3.Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.4.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.5.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Carry out repair	<p>3.1.Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.Adjustments made during the repair are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle/ equipment for use or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to</p>

ELEMENT	PERFORMANCE CRITERIA
	workplace expectations 4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations 4.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety

## REQUIRED SKILLS AND KNOWLEDGE

requirements

- National Environmental Protection Measures for Diesel Vehicles as applicable to tasks
- engine construction and operation relevant to application
- types and layout of service/repair manuals (hard copy and electronic)
- engine/component repair procedures
- engine removal and replacement procedures
- measuring and testing procedures
- equipment/component safety requirements
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- dismantling, evaluating, assembling, adjustment, measuring and testing
- repairing a range of engines and associated components to workplace requirements and specifications
- repairing of engine and associated components completed within workplace guidelines and timeframes

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of engines and associated engine components
- equipment, hand and power tooling appropriate to the repair of engines and associated engine components
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Engines</b>	Engines may be: <ul style="list-style-type: none"> <li>• four stroke spark ignition engines for light vehicle, motorcycle and marine craft</li> <li>• two stroke spark ignition engines for motorcycle and marine craft</li> <li>• four stroke compression ignition engines for light vehicle, heavy vehicle, mobile plant and marine craft</li> <li>• two stroke compression ignition for heavy vehicle, mobile plant, and marine craft</li> </ul>
<b>Repair methods</b>	Repair methods are to include identification of component wear/damage, fluid leakage, removal, dismantling, reassembly, refitting, adjusting and testing
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors

<b>RANGE STATEMENT</b>	
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tools and equipment may include hand tools, power tools, lifting and jacking equipment, specialist tools and lubricant dispensing equipment
<b>Materials</b>	Materials may include spare parts, consumables, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repairing engines and associated components</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules, Environment Protection</li></ul>

## RANGE STATEMENT

	<p>Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines Engineer's design specifications and instructions</p> <ul style="list-style-type: none"> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>
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## Unit Sector(s)

Unit sector	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURLTE4004 Diagnose complex faults in light vehicle petrol engines

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to diagnose complex faults in light vehicle petrol engines in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults will be mechanical by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies to and includes system fault and failure diagnosis of petrol engines of light vehicles, four wheel drive and light commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <i>light vehicle petrol engines</i> are accessed and interpreted</p> <p>1.3. <i>Workplace health and safety (WHS) requirements</i>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <i>faults</i> in light vehicle petrol engines are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <i>tests</i> and testing process are identified and selected from the range of available options</p> <p>2.4. <i>Testing equipment</i> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <i>diagnostic processes</i> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternative or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to light vehicle petrol engines
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of light vehicle petrol engines, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of light vehicle petrol engines
- types, function, operation and limitations of light vehicle petrol engines, including:
  - intake, exhaust, lubrication, cooling and engine mounting systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to light vehicle petrol engines
- testing procedures of light vehicle petrol engines, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different light vehicle petrol engines with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in light vehicle petrol engines.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with real or simulated light vehicle petrol

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

engine faults

- tools and equipment appropriate for the diagnosis of complex faults in light vehicle petrol engines
- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Light vehicle petrol engines</i></b> may include:	<ul style="list-style-type: none"> <li>two-stroke, four-stroke or rotary petrol engines to 8 litres</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>may include: <ul style="list-style-type: none"> <li>protective clothing and equipment</li> <li>use of tools and equipment</li> <li>handling of material</li> <li>use of fire-fighting equipment</li> <li>first aid equipment</li> </ul> </li> <li>hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>engine (poor performance, excessive oil consumption, engine stoppages)</li> <li>intake system (leakage, noise, vibration, inadequate control)</li> <li>exhaust system (pressure, abnormal emissions)</li> <li>lubrication (pressure, flow, leakage, abnormal engine wear, inadequate filtration, sludge formation, excessive deposits, overheating)</li> <li>cooling (overcooling, insufficient cooler flow, coolant out of specification, lack of air flow, internal corrosion)</li> <li>indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations</li> <li>component specifications, component assembly, component damage and system modifications</li> <li>indirect engine mechanical faults</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>component wear analysis, compression testing, cylinder leakage, engine performance analysis, exhaust gas sampling, oil consumption analysis, oil pressure testing, temperature and engine vacuum measurement.</li> <li>mechanical systems testing</li> <li>road test</li> </ul>
<b><i>Testing equipment</i></b> may	<ul style="list-style-type: none"> <li>bore gauges, compression gauges, scan tools, cooling system analyser, dial gauges, exhaust gas analysers, micrometers,</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:

multimeter, oscilloscope, pressure gauges, stethoscope, telescopic gauges, temperature gauges, tachometer, timing lights, vacuum gauges, verniers, barometers

- manufacturer/component supplier testing equipment

***Diagnostic processes*** may include:

- analysing manufacturer/component supplier specifications, schematics and operational procedures related to light vehicle petrol engines
- component substitution
- six-step troubleshooting plan
- discover-investigate-fix methodology

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical – Engines

**Custom Content Section**

Not applicable.

## AURLTE4005 Diagnose complex faults in light vehicle diesel engines

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to diagnose complex faults in light vehicle diesel engines in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults will be mechanical by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies to system fault and failure diagnosis of diesel engines of light vehicles, four wheel drive and light commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning light vehicle diesel engines are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in light vehicle diesel engines are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to light vehicle diesel engines
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of light vehicle diesel engines, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of light vehicle diesel engines
- types, function, operations and limitations of light vehicle diesel engines, including:
  - intake, exhaust, lubrication, cooling and engine mounting systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to light vehicle diesel engines
- testing procedures for light vehicle diesel engines, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different light vehicle diesel engines with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in light vehicle diesel engines.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated light vehicle

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

diesel engine faults

- tools and equipment appropriate for the diagnosis of complex faults in light vehicle diesel engines
- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Light vehicle diesel engines</i></b> may include:	<ul style="list-style-type: none"> <li>two-stroke and four-stroke diesel engines to 8 litres</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>may include: <ul style="list-style-type: none"> <li>protective clothing and equipment</li> <li>use of tools and equipment</li> <li>handling of material</li> <li>use of fire-fighting equipment</li> <li>first aid equipment</li> </ul> </li> <li>hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>engine (poor performance, excessive oil consumption, engine stoppages)</li> <li>fuel systems (contamination, flow, pressure, leakage)</li> <li>intake system (leakage, noise, vibration, inadequate control)</li> <li>exhaust system (pressure, abnormal emissions), including forced air induction systems</li> <li>lubrication (pressure, flow, leakage, abnormal engine wear, inadequate filtration, sludge formation, excessive deposits, overheating)</li> <li>cooling (overcooling, insufficient cooler flow, coolant out of specification, lack of air flow, internal corrosion)</li> <li>mounting (noise, vibration, hardness, clutch shudder, erratic transmission control)</li> <li>component specifications, component assembly, component damage and system modifications</li> <li>indirect engine mechanical faults</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>component wear analysis, compression testing, cylinder leakage, engine performance analysis, exhaust gas sampling, oil consumption analysis, oil pressure testing, temperature and forced induction pressure tests</li> <li>mechanical systems testing</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>road test</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>bore gauges, compression gauges, scan tools, cooling system analyser, dial gauges, exhaust gas analysers, micrometers, multimeter, oscilloscope, pressure gauges, stethoscope, telescopic gauges, temperature gauges, tachometer, timing lights, vacuum gauges, verniers, and may include anemometer, barometer, hygrometer, specific gravity gauge</li> <li>manufacturer/component supplier testing equipment</li> </ul>
<b><i>Diagnostic processes</i></b> may include:	<ul style="list-style-type: none"> <li>analysing manufacturer/component supplier specifications, schematics and operational procedures related to light vehicle diesel engines</li> <li>component substitution</li> <li>six-step troubleshooting plan</li> <li>discover-investigate-fix methodology</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Passenger/Light Vehicle
<b>Unit sector</b>	Technical – Engines

**Custom Content Section**

Not applicable.

## AURLTE5003 Analyse and evaluate light vehicle engine and fuel system faults

### Modification History

Release	Comment
Release 1	Replaces AURT570293A Analyse and evaluate light vehicle engine and fuel system faults Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to analyse and evaluate light vehicle engine and fuel systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations.</p> <p>It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning light vehicle engines are accessed and interpreted.</p> <p>1.3. WHS requirements, including equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet objectives of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Light vehicle engine and fuel system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified,</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary

**REQUIRED SKILLS AND KNOWLEDGE**

light vehicle engine and fuel systems, monitoring and testing processes, diagnostic methods and options and safety procedures.

- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

**Required knowledge**

- light vehicle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the types, functions, operations and limitations of light vehicle engines.
- detailed knowledge of the types, function, operations and limitations of light vehicle fuel, ignition, intake, exhaust, lubrication, cooling and engine mounting systems/ components.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of automotive digital computing systems.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analysis on a minimum of three light vehicle engine and fuel systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measures.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for light vehicle engine and fuel systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objectives for analysis and evaluation, light vehicle engine and fuel systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objectives, research facilities and technical information and a work environment.

**EVIDENCE GUIDE****Method of assessment**

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Failure analysis and evaluation process

The objectives of the failure analysis and evaluation process may determine fault rectification measures, effect variation in system characteristics and parameters or enhancing system performance.

#### Engine and fuel systems

- Engine and fuel systems are to include two-stroke, four-stroke rotary, petrol engine to 8 litres and diesel engine to 8 litres.
- Engine and fuel systems to be covered in this unit are to include the engine and related fuel, ignition, intake, exhaust, lubrication and cooling systems. Systems are to include innovative engine design and ceramic engine componentry.

#### Engine and fuel system failures

- Engine and fuel system failures covered by this unit are to include engine (poor performance, excessive oil consumption, engine stoppages), fuel (contamination, flow, pressure, leakage), ignition (no-start, no-run, misfire, erratic operation, lack of power, charging), intake (leakage, noise, vibration, inadequate control, exhaust (pressure, abnormal emissions), lubrication (pressure, flow, leakage, abnormal engine wear, inadequate filtration, sludge formation, excessive deposits, overheating), cooling (overcooling, insufficient cooler flow, coolant out of specification, lack of air flow, internal corrosion), mounting (noise, vibration, hardness, clutch shudder, erratic transmission control).
- Engine and fuel system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.

#### Unit context

- WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods

<b>RANGE STATEMENT</b>	
	<p>code and safe operating procedures.</p> <ul style="list-style-type: none"> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include bore gauges, compression gauges, computer-based diagnostic system (direct and internet), cooling system analyser, dial gauges, exhaust gas analysers, micrometers, multimeter, oscilloscope, pressure gauges, stethoscope, telescopic gauges, temperature gauges, tachometer, timing lights, vacuum gauges, verniers, and may include anemometer, barometer, hygrometer, specific gravity gauge.
<b>Tests</b>	Tests are to include component wear analysis, compression, cylinder leakage, engine performance, exhaust gas sampling, flow, oil consumption, pressure, sample collection/processing, specific gravity, temperature and vacuum.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for</li> </ul>

**RANGE STATEMENT**

	<p>testing equipment and materials.</p> <ul style="list-style-type: none"><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to light vehicle engine and fuel systems.</li><li>• Australian Design Rules.</li><li>• Vehicle industry regulations.</li><li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Light
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## AURLTF3001 Diagnose and repair mechanical fuel injection systems

### Modification History

Release	Comment
Release 1	Replaces AURT303166B Repair petrol fuel systems Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect mechanical fuels injections technologies
Release 2	Minor typographical errors corrected

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair mechanical fuel injection systems fitted to vehicles. It involves diagnosing deviations from correct operation, repairing mechanical fuel injection components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the mechanical fuel injection systems of light vehicles in the passenger vehicle and light commercial environments.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a mechanical fuel injection system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a mechanical fuel injection system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a mechanical fuel injection system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and other measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of motorcycle braking systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
  - equipment to measure and adjust exhaust emissions
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- operate diagnostic and test equipment
- use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with petrol
- principles of carburation
- application, purpose and operation of mechanical fuel injection systems
- testing procedures for mechanical fuel injection systems
- repair procedures for mechanical fuel injection systems
- post-repair testing procedures for mechanical fuel injection systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of mechanical fuel injection systems
- diagnose and repair mechanical fuel injection systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with mechanical fuel injection faults relevant to the qualification being sought
- equipment appropriate for the testing of mechanical fuel

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

injection systems

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of light vehicle mechanical fuel injection systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• mechanical fuel injection system diagnosis and repair methods, processes and equipment</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of mechanical fuel injection systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• light vehicle service requirements and repair manuals.</li> </ul>
<b>Diagnostic tests</b> must	<ul style="list-style-type: none"> <li>• cold-start enrichment inspection</li> <li>• cold and hot engine exhaust gas analysis.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	
<b><i>Diagnostic tests</i></b> may include:	<ul style="list-style-type: none"> <li>• associated component inspection and evaluation</li> <li>• fuel pump pressure, vacuum and flow tests</li> <li>• testing for air leaks</li> <li>• isolation of faults.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• rough running</li> <li>• poor performance</li> <li>• excessive fuel consumption</li> <li>• excessive emissions (particulates, hydrocarbons, carbon monoxide, oxides of nitrogen).</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> must include:	<ul style="list-style-type: none"> <li>• cold-start enrichment operation</li> <li>• exhaust gas analysis.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical – Fuel Systems

**Custom Content Section**

Not applicable.

## AURLTJ2001 Select tyres and rims for specific applications (light)

### Modification History

Release	Comment
Release 1	Replaces AURT217668A Select tyres and rims for specific applications (light) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to select tyres and rims to suit specific applications in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, selection of tyres and rims and completion of work finalisation processes, including clean-up and documentation.</p> <p>Tyres and rims may be those covered by the RS&amp;R Training Package and may include, but are not limited to light vehicles, motorcycles, trailers that are used on sealed and unsealed surfaces.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to select tyres and rims for specific applications	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals specifications, and tooling required, are sourced 1.4.Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures
2. Select tyre and rims for specific applications	2.1.Information required for the work is accessed from manufacturer/component supplier specifications and correctly interpreted 2.2.Tyre and rim options are analysed to identify technical compliance and economic benefits 2.3.Selection procedures are carried out in accordance with legislation, industry and enterprise policies/procedures guidelines 2.4.Selected products are those which most closely meet customer requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to

**REQUIRED SKILLS AND KNOWLEDGE**

customers

- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the selection of tyres and rims, including the use of measuring equipment, computerised technology and communication devices and the reporting/ documenting of results

**Required knowledge**

- WHS regulations/requirements, Australian Design Rules equipment, material and personal safety requirements
- tyre and rim terminology and codes
- differing rim and tyre types and tread patterns and their applications
- safe handling and storage procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• accurately interpreting information upon which selection is based</li> <li>• conducting selection in accordance with customer and workplace requirements</li> <li>• achieving the closest possible match between products and requirements</li> <li>• completing selection within workplace timeframes</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the selection of tyres and rims</li> <li>• equipment, hand and power tooling appropriate to the selection of tyres and rims</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning</p>

**EVIDENCE GUIDE**

knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Tyres</b>	Tyres may include tube, tubeless, dual sizing, radial, belted bias or directional
<b>Specific applications</b>	Specific applications may include varying terrain and soils, weather conditions and tracking requirements
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, machinery movement working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but not limited operating safely in the event of fires, enterprise first aid requirements and plant evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian

<b>RANGE STATEMENT</b>	
	Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment are to include a range of different tyres and wheels for different applications
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the selection of tyres and rims</li> <li>• regulatory/legislative requirements pertaining to the Automotive manufacturing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Light
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Wheels and Tyres
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## AURLTJ2002 Remove, inspect, repair and fit tyres and tubes (light)

### Modification History

Release	Comment
Release 1	<p>Replaces AURT217766A Remove, inspect, repair and fit tyres and tubes (light)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to remove, inspect, repair and fit tubes and tyres.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal, repair and fitting of tyres and tubes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes light vehicles, motorcycles, trailers and outdoor power equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to remove, repair and fit tyres and tubes</b>	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical requirements for removal, repair and fitting of tyres and tubes are sourced and support equipment is identified and prepared
2. <b>Remove tyre from rim</b>	2.1.Methods for the removal are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Removal of tyre is carried out in accordance with vehicle/ plant/system manufacturer/component supplier requirements 2.3.Tyre is removed without causing damage to any component 2.4.Tyre is inspected in readiness for repair 2.5.Tyre removal activity is carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
3. <b>Repair tyres and tubes</b>	3.1.Methods for the repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2.Repair of tyre and tube are carried out in accordance with vehicle/plant/system manufacturer/component supplier requirements 3.3.Tyre and tube are repaired without causing damage to any component 3.4.Tyre removal activity is carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
4. <b>Fit tyres and tubes</b>	4.1.Methods for the fitting are implemented in accordance with workplace procedures and manufacturer/component supplier specifications

ELEMENT	PERFORMANCE CRITERIA
	4.2.Tyre and tube are mounted onto rim 4.3.Tyre and tube assembly are pressure tested
5. <b>Prepare tyre and tube assembly for use or storage</b>	5.1.Repair documentation is completed 5.2.Final inspection is made to ensure work is to workplace expectations 5.3.Tyre and tube assembly are presented for use or storage to workplace expectations 5.4.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal, repair and fitting of tubes and

**REQUIRED SKILLS AND KNOWLEDGE**

tyres, including the use of measuring equipment, specialist tooling, computerised technology and communication devices and the reporting/documenting of results

**Required knowledge**

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with tyre changing equipment
- general knowledge of types of rim and tyre construction, terms and codes
- types and layout of service/repair manuals (hard copy and electronic)
- removal, repair and fitting procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the removal, inspection, and fitting of tyres in accordance with workplace and manufacturer/ component supplier requirements
- completing the repair of tyres in accordance with Australian Design Rules
- completing the work within workplace timeframes
- presenting wheel assembly to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the removal, repair and fitting of tyres and tubes
- equipment, hand and power tooling appropriate to the removal, repair and fitting of tyres and tubes
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Tyres</b>	Tyres may include: tube, tubeless, dual sizing, radial, belted bias, directional
<b>Repairs</b>	Repairs to tyres are to be within the specifications and limits imposed current Australian Design Rules
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and

<b>RANGE STATEMENT</b>	
	clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialised equipment such as buffs, spreaders, tyre removal equipment, immersion tanks and various repair material
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the removal, repair and fitting of tubes and tyres (light)</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Light
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Wheels and Tyres
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## AURLTJ2003 Remove, inspect, and refit light vehicle wheel assemblies

### Modification History

Release	Comment
Release 1	Replaces AURT217665A Remove, fit and inspect wheel assemblies  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to remove, inspect and fit wheel assemblies fitted to light vehicles. It involves diagnosing deviations from correct operation, removal, inspection and fitting procedures of wheel assemblies.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the wheel assemblies of light vehicles, four wheel drive, light commercial vehicles and light trailers. This unit does not apply to work related to motorcycle or heavy vehicle wheel assemblies.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove wheel assembly	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements relating to removing light vehicle wheel assemblies</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Removal options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate tools and equipment are selected and prepared</p>
2. Remove and inspect wheel assembly	<p>2.1. Wheel assembly is removed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. <b>Inspection of wheel assembly</b>, mounting points and fittings for damage and wear is carried out</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Fit wheel assembly	<p>3.1. <b>Fitting options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools and equipment are selected and prepared</p> <p>3.3. Wheel assembly is fitted according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>3.4. Wheel operation is checked for correct assembly, run-out and alignment according to workplace procedures and manufacturer and component supplier specifications</p>
4. Clean up work area and finalise work processes	<p>4.1. <b>Final inspection</b> is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to interpret gauges, instruments and measuring equipment
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the removal, inspection and fitting of wheel assemblies
- technology skills to use technology to collect and provide information.

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with light vehicle wheel assemblies
- lifting and supporting procedures for light vehicles
- types and applications of wheels and rims, including:
  - stamped or pressed-steel rims
  - die-cast or forged rims
- removal, inspection and fitting procedures of light vehicle wheel assemblies
- post-fitting procedures and checks of light vehicle wheel assemblies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- remove, inspect and fit a range of light vehicle wheel assemblies according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- light vehicles and light vehicles wheel assemblies
- tools and equipment appropriate for the removal, inspection and fitting of light vehicle wheel assemblies
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Workplace instructions** may include:

- computer-generated instructions
- verbal instructions
- written instructions.

**Workplace health and safety (WHS) requirements:**

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

**Procedures and information** may include:

- safe work procedures relating to the removal, inspection and fitting of light vehicle wheel assemblies
- verbal, written and graphical instructions
- signage
- work schedules, plans and specifications
- work bulletins or memos
- material safety data sheets (MSDS)
- diagrams or sketches
- regulatory and legislative requirements relating to the automotive industry
- Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards
- light vehicle service requirements and repair manuals.

**Removal options** may include:

- front wheel removal
- rear wheel removal
- removal of other systems to gain access to wheel

**Inspection of wheel**

- tyre condition

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>assembly</i> may include:	<ul style="list-style-type: none"><li>• rim condition</li><li>• wheel bearing condition</li></ul>
<i>Fitting options</i> may include:	<ul style="list-style-type: none"><li>• manual handling or motor-assisted handling of wheel assemblies</li><li>• manual or power-tool tightening of wheel nuts</li></ul>
<i>Final inspection</i> may include:	<ul style="list-style-type: none"><li>• wheel assembly run-out and alignment testing</li><li>• the correct operation of vehicle systems affected by the removal and fitting of wheel assemblies</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical – Wheels and Tyres

**Custom Content Section**

Not applicable.

## AURLTJ3004 Provide advice on the effects of wheel and tyre combinations

### Modification History

Release	Comment
Release 1	Replaces AURT318054A Provide advice on the effects of wheel and tyre combinations Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to effectively advise customers on how specific wheel and tyre combinations can affect their vehicle's ride and handling characteristics.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit applies to light vehicles, including 4WDs, light commercial vehicles and various types of motorsport vehicles.</p> <p>It includes identification and confirmation of work requirement, preparation for work, confirmation of customer needs, technical analysis of needs and options, provision of advice on compliance, recommendation as to a plan of action and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves advising customers how specific non-standard wheel and tyre combinations can affect ride and handling characteristics of their vehicle.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm facts relating to customer enquiry	1.1. Customer is consulted to determine if wheel and tyre modifications are actual or proposed 1.2. Reasons for requiring alternative wheel and tyre combinations are discussed and confirmed with customer 1.3. Specifications of proposed or actual wheel and tyre combinations are clarified with customer
2. Access and confirm data to make an informed technical opinion	2.1. Technical product persons from identified wheel and tyre manufacturer/component supplier are consulted to access technical information and advice 2.2. Proposed or actual modifications are confirmed if they contravene Australian Design Rules 2.3. Technical product information to assist with providing information about wheel and tyre modifications is researched and accessed 2.4. Colleagues are consulted who may be able to assist through previous technical knowledge and experience
3. Recommend a plan of action to meet customer requirements	3.1. An explanation is given to the customer on how specifications relate to intended use of vehicle 3.2. Implications of wheel and tyre combination not complying with a specific Australian Design Rules regulation is discussed with customer 3.3. Suitability of proposed or actual wheel and tyre combination is discussed with customer and advice is given based on experience or facts derived from product sources 3.4. Suitable plan of action is discussed and clarified to meet customer needs

## Required Skills and Knowledge

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
This section describes the skills and knowledge required for this unit.
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• apply research and interpretive skills sufficient to locate, interpret and apply</li> </ul>

**REQUIRED SKILLS AND KNOWLEDGE**

- manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
  - apply plain English literacy and communication skills in relation to dealing with customers and team members
  - apply questioning and active listening skills for example when obtaining information from customers
  - apply oral communication skills sufficient to convey information and concepts to customers
  - apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
  - interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
  - establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
  - use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
  - use workplace technology related to advising on wheel and tyre combinations, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

**Required knowledge**

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- the implications of contravening Australian Design Rules
- principles of wheel and tyre technology
- types, characteristics, uses and limitations of wheel and tyre combinations
- methods of effectively discussing technical information with customers
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- confirming facts relating to wheel and tyre modifications
- accessing sources of wheel and tyre technical information
- developing a plan of action which satisfies customer requirements in the most economical and legal fashion
- presenting automotive wheel and tyre technical information and specifications at an understandable level to customer

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to advising on wheel and tyre combinations
- equipment and tooling appropriate to advising on wheel and tyre combinations
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

	<p>of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Wheel and tyre specifications**

Types of wheel and tyre specifications are to include wheel rim sizes, wheel material, wheel diameters, tyre sizes, tyre compounds and tyre tread designs

**Product sources**

Product sources are to include specialist tyre retail outlets, specialist wheel retail outlets, specialist

<b>RANGE STATEMENT</b>	
	wheel and tyre repairers, wheel and tyre manufacturer/component suppliers
<b>Colleagues</b>	Colleagues may include other mechanics or technicians, supervisory staff and contacts made with wheel and tyre manufacturer/component suppliers
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, breaker devices, gauges, jacks, hoists and pressure testing devices
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and

RANGE STATEMENT	
	paggers
Information/documents	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

Unit sector	Technical
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## Co-requisite units

Not applicable.

## Competency field

Competency field	
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## AURLTQ3001 Repair final drive assemblies (light vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTL312666A Repair final drive assemblies (light vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out repairs to final drive assemblies.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing, analysis of results and carrying out repairs to final drive assemblies and associated components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes light vehicles, motorcycles and outdoor power equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repairs to final drive assemblies	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for final drive assembly repair are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with final drive assemblies are observed</p>
2. Conduct final drive assembly tests and analyse results	<p>2.1.Methods for test on final drive assembly are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Carry out repairs	<p>3.1.Methods for repairs are implemented in accordance with workplace procedures and manufacture/component supplier specifications</p> <p>3.2.Adjustments made during the repair are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle for use or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled and tracked vehicles and equipment
- the identification of application, purpose and operation
- the identification of component parts to include physical, fluid, gases and heat

**REQUIRED SKILLS AND KNOWLEDGE**

- generation
- types and layout of service/repair manuals (hard copy and electronic)
- inspection and test procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a final drive assembly relative to the qualification being sought
- interpreting test results
- repair of final drive assembly and associated components completed within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of final drive assemblies
- equipment, hand and power tooling appropriate to the repair of final drive assemblies
- activities covering mandatory task requirements

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Variables</b>	Variables to include bevel, spiral bevel and hypoid gearing
<b>Repair methods and sequence</b>	Repair methods and sequence are to include isolation of fault(s), dismantling, inspection and evaluation, replacement of components parts, assembly and completion of operational tests and records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, pulling, pushing and load testing devices
<b>Materials</b>	Materials may include lubricants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair of final drive assemblies and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> </ul>

**RANGE STATEMENT**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• Australian Standards</li></ul> |
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**Unit Sector(s)**

Unit sector	Mechanical - Light
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**Co-requisite units**

Not applicable.

**Competency field**

Competency field	Technical - Driveline and Final Drives
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## AURLTQ3002 Repair final drive - driveline (light vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTL313166A Repair final drive – driveline (light vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out repairs to drive and tail shafts.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of results, completion of repairs to final drive and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes light vehicles.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repairs to final drive driveline	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for repair of drivelines are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with rotating components are observed</p>
2. Test driveline and analyse results	<p>2.1.Methods for tests associated with drivelines is implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Driveline test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is processed in accordance with workplace procedures</p>
3. Carry out repairs	<p>3.1.Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.Adjustments made during the repair work are in accordance with manufacturer/component supplier specifications</p>
4. Prepare equipment for use or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Equipment is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- the identification of application, purpose and operation
- the identification of component parts to include physical, fluid, gases and heat generation
- dangers of working with rotating shafts and gear systems
- types and layout of service/repair manuals (hard copy and electronic)
- testing procedures, including balancing shaft
- repair procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a driveline relative to the qualification being sought
- interpreting test results
- conducting repair in accordance with workplace and manufacturer/component supplier requirements
- completing repair of driveline and associated components within workplace timeframes
- equipment presentation to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to repairing final drivelines
- equipment, hand and power tools appropriate to repairing final drivelines

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Variables</b>	Variables include universal joints, constant velocity joints and centre bearings
<b>Repair methods and sequence</b>	Repair methods and sequence are to include isolation of fault(s), dismantling, inspection and evaluation, replacement of components parts, assembly and completion of operational tests and records
<b>Faults</b>	Faults to include: <ul style="list-style-type: none"> <li>• driveline vibration</li> <li>• abnormal noises</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency

<b>RANGE STATEMENT</b>	
	shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of final drive (driveline) and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>requirements</li><li>instructions issued by authorised enterprise or external persons</li><li>Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Light Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURLTQ5003 Analyse and evaluate light vehicle driveline system faults

### Modification History

Release	Comment
Release 1	Replaces AURT570193A Analyse and evaluate light vehicle driveline system faults Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to analyse and evaluate light vehicle driveline systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations.</p> <p>It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements</p> <p>1.2. Benchmark specifications for correctly functioning light vehicle driveline systems are accessed and interpreted</p> <p>1.3. WHS requirement, including equipment and system isolation requirements and personal protection needs are observed throughout the work</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objectives of the work</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use</p> <p>2.6. Light vehicle driveline system components are prepared for the diagnostic process, including park-up, isolation and cleaning</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary light vehicle driveline systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- light vehicle terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, function, operations and limitations of light vehicle clutch, torque converter, manual transmission, automatic transmission, drive shaft, final drive systems/components.
- detailed knowledge of the types, function, operations and limitations of four wheel drive system components using transfer cases, differentials and free wheel hubs.
- general knowledge of automotive digital computing systems.
- general knowledge of the theory of diagnosis, including concept, design and

**REQUIRED SKILLS AND KNOWLEDGE**

- planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three light vehicle driveline systems with real or simulated multi-system and intermittent faults, and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for light vehicle driveline systems.
- Document and report the diagnostic process and findings and recommended rectification for two of the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.

Access to a requirement and objectives for analysis and evaluation, light vehicle driveline systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objectives, research facilities and technical information and a work environment.

**EVIDENCE GUIDE****Method of assessment**

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Vehicles</b>	Light vehicles are to include two wheel and four-wheel drive vehicles.
<b>Driveline systems</b>	Driveline systems are to cover all sub-systems and components, including clutches, torque converters, manual transmissions (including electric and clutch less), automatic transmissions, drive shafts and final drives.
<b>Diagnosis</b>	Diagnosis is to cover module and parts replacement in related electrical and electronic control systems.
<b>Driveline system failures</b>	<ul style="list-style-type: none"> <li>• Driveline system failures covered by this unit are to include abnormal gear wear, abnormal clutch operations, contamination, hard shifting, harshness, loose mountings, leaks, lubrication, noises, transmission slippage and vibrations.</li> <li>• Driveline system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, WHS, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate</li> </ul>

<b>RANGE STATEMENT</b>	
	research, analytical, judgement and problem-solving skills in the diagnosis of faults.
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include compound levels, pressure gauges, multimeters, tachometers and computerised diagnostic systems.
<b>Tests</b>	Tests to be conducted are to include lubricant inspection, pressure, road testing, sensor integrity and function, solenoid operation/function, wiring and power control ECU integrity.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"><li>• Workplace procedures relating to the use of tooling and equipment.</li><li>• Workplace procedures relating to reporting and communication.</li><li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to light vehicle driveline systems.</li><li>• Australian Design Rules.</li><li>• Vehicle industry regulations.</li><li>• Vehicle industry publications related to emerging steering and suspension system technology and technology changes.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Light Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURLTX3001 Repair transmissions - manual (light vehicle)

### Modification History

Release	Comment
Release 1	Replaces AURTL306666A Repair transmissions - manual (light vehicle) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out removal, repair and replacement of manual transmissions.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of systems, removal, repair and replacement of manual transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• light vehicles, motorcycle and outdoor power equipment.</li></ul> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake testing of manual transmission	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for testing of manual transmissions are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with manual transmissions are observed</p>
2. Test manual transmission and analyse results	<p>2.1.Methods for tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Road/site test is conducted for abnormalities</p> <p>2.3.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.4.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.5.Report is processed in accordance with workplace procedures</p>
3. Prepare to repair manual transmissions	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for repair are identified and support equipment is identified and prepared</p>
4. Carry out repairs	<p>4.1.Methods for repairs are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments made during repairs are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle/	5.1.Repair schedule documentation is completed

ELEMENT	PERFORMANCE CRITERIA
equipment for use or storage	<p>5.2.Road/site test is conducted to ensure transmission operation is to manufacturer/component supplier specifications</p> <p>5.3.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.4.Final inspection is made to ensure work is to workplace expectations</p> <p>5.5.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>5.6.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment,

**REQUIRED SKILLS AND KNOWLEDGE**

computerised technology and communication devices and the documenting/recording of results

**Required knowledge**

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with transmissions
- the identification of application, purpose and operation
- the identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting testing results
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a manual transmission relative to the qualification being sought
- conducting repairs in accordance with workplace and manufacturer/component supplier requirements
- completing repair of transmissions and associated components within workplace timeframes

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to repairing manual transmissions
- equipment, hand and power tools appropriate to repairing manual transmissions
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Repair methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>• road testing, test under operating conditions</li> <li>• visual, aural and functional assessment (including: fluid leakage, gear selection, wear, damage, corrosion)</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements:</p> <ul style="list-style-type: none"> <li>• manual transmissions, front and/or rear wheel drive configurations</li> <li>• belt drive transmission</li> <li>• transmission must be of multiple speed constant mesh or synchromesh design</li> </ul>
<b>Variables</b>	<p>Other variables may include:</p> <ul style="list-style-type: none"> <li>• power take off assemblies</li> <li>• multiple forward and reverse gears</li> <li>• multi countershaft</li> <li>• synchronised and non-synchronised gear selection</li> <li>• metal and non-metal gears</li> <li>• electrical/pneumatic control</li> <li>• transverse/longitudinal mounting</li> <li>• helical, double helical and spur gears</li> <li>• transaxle, overdrive, transfer case and belt drive speed control</li> </ul>
<b>Repair methods and sequence</b>	<p>Repair methods and sequence are to include isolation of fault(s); dismantling, inspection and evaluation; replacement of component parts; assembly and completion of operational tests and records</p>
<b>Faults</b>	<p>Faults to include noisy operation, jumping out of gear, external oil leaks, loss of drive</p>

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repair, removal and replacement of manual transmissions and/or associated components</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Light Vehicle
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Transmission
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## AURLTX3002 Repair transmissions - automatic (light vehicle)

### Modification History

Release	Comment
Release 1	<p>Replaces AURTL307166A Repair transmissions - automatic (light vehicle)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the repair of automatic and semi-automatic transmissions and associated components, including torque converters.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of systems, repair or replacement of and automatic and semi-automatic transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>For repairs to electronic control drive management systems refer to AURETR3044 Service and repair electronic drive management systems.</p> <p>Work involved includes automatic and semi-automatic transmissions in light vehicles.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own</p>
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	work activities and contributing to a productive team environment.
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to test transmission	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tools, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for testing of transmissions are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with semi automatic, automatic transmissions are observed</p>
2. Test transmission and analyse results	<p>2.1.Methods for system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Road/site test is conducted to identify transmission operational abnormalities</p> <p>2.3.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.4.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.5.Report is processed in accordance with workplace procedures</p>
3. Prepare to repair and/or replace transmission	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for repair are identified and support equipment is identified and prepared</p>
4. Carry out repair and/or replacement	<p>4.1.Methods for repair and/or replacement are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>4.2.Adjustments made during the repair and/or</p>

ELEMENT	PERFORMANCE CRITERIA
	replacement are in accordance with manufacturer/component supplier specifications
5. Prepare vehicle/ equipment for use or storage	5.1.Repair and/or replacement schedule documentation is completed 5.2.Final inspection is made to ensure protective guards, safety features are in place 5.3.Final inspection is made to ensure work is to workplace expectations 5.4.Vehicle/equipment is cleaned for use or storage to workplace expectations 5.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks

**REQUIRED SKILLS AND KNOWLEDGE**

- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

**Required knowledge**

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with transmissions
- operating principles of automatic and semi automatic transmissions and their relationship to other systems
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- repair and/or replacement procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting diagnosis results
- conducting repair and/or replacement of a range of transmissions in accordance with workplace and manufacturer/component supplier requirements
- completing work within workplace timeframes
- vehicle/transmissions presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to carrying out repairs to automatic and semi-automatic transmissions and associated components
- equipment, hand and power tooling appropriate to carrying out repairs to automatic and semi-automatic transmissions and associated components
- activities covering mandatory task requirements

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Transmissions</b>	<p>Transmissions include:</p> <ul style="list-style-type: none"> <li>• automatic and semi automatic transmissions power shift, front and/or rear wheel drive configurations</li> <li>• power take off assemblies</li> <li>• pre-selective transmissions</li> <li>• electronically controlled transmissions</li> </ul>
<b>Repair methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>• operational testing, testing under operating conditions, test bench testing, electrical testing</li> <li>• visual, aural and functional assessment (including fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</p>
<b>Environmental requirements</b>	<p>Environmental requirements are to include but are</p>

<b>RANGE STATEMENT</b>	
	not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load and pressure testing devices
<b>Materials</b>	Materials may include transmission fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the repair of automatic and semi-automatic transmissions and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> </ul>

**RANGE STATEMENT**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• Australian Standards</li></ul> |
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical - Light Vehicle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURLTX3003 Diagnose and repair light vehicle clutch systems

### Modification History

Release	Comment
Release 1	Replaces AURT306170A Inspect, service and/or repair clutch assemblies and associated operating system components  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to diagnose and repair clutch systems fitted to light vehicles. It involves diagnosing deviations from correct operation, repairing clutch components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	Work applies to the clutch systems of light vehicles, four wheel drive and light commercial vehicles. This unit does not apply to work related to motorcycle or heavy vehicle clutch systems.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a light vehicle clutch system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> relating to <b>light vehicle clutch systems</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a light vehicle clutch system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a light vehicle clutch system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - obtain, record and interpret measurements
  - reading and interpretation of mathematical information
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of light vehicle clutch systems, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing light vehicle clutch systems
- dangers of working with light vehicle clutch systems
- operating principles of light vehicle clutch systems
- application, purpose and operation of light vehicle clutch systems
- testing procedures for light vehicle clutch systems
- repair procedures for light vehicle clutch systems
- post-repair testing procedures for light vehicle clutch systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of light vehicle clutch systems
- diagnose and repair light vehicle clutch systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- light vehicles with clutch system faults relevant to the qualification being sought
- equipment appropriate for the testing of light vehicle clutch systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of light vehicle clutch systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• light vehicle clutch system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of light vehicle clutch systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• light vehicle service requirements and repair manuals.</li> </ul>
<b>Light vehicle clutch systems</b>	<ul style="list-style-type: none"> <li>• dry single or multi-plate clutch</li> <li>• cable operated clutch</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

may include:	<ul style="list-style-type: none"> <li>hydraulically-operated clutch</li> <li>mechanically operated clutch.</li> </ul>
<b><i>Diagnostic tests</i></b> may include:	<ul style="list-style-type: none"> <li>analysis of clutch system operation during mobile or stationary tests</li> <li>isolation of faults</li> <li>component inspection and evaluation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>clutch slippage</li> <li>clutch drag and binding</li> <li>clutch chatter</li> <li>clutch pedal pulsation</li> <li>clutch vibration</li> <li>clutch system noise.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>component repair procedures, including: <ul style="list-style-type: none"> <li>removal, replacement and adjustment procedures</li> <li>dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>testing of clutch system operation during mobile or stationary tests.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical – Transmission

**Custom Content Section**

Not applicable.

## AURLTX4004 Diagnose complex faults in light vehicle transmission and driveline systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in light vehicle transmission and driveline systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of transmission and driveline systems of light vehicles, four wheel drive and light commercial vehicles.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning light vehicle transmission and driveline systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, equipment and system isolation requirements and personal protection needs, are observed and applied throughout the work</p> <p>1.4. Effects of systemic deficiencies, discrepancies or <b>faults</b> in light vehicle transmission and driveline systems are identified and confirmed from direct or indirect evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to diagnose faults	<p>2.1. Criteria for fault diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements and discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process, are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to light vehicle transmission and driveline systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of light vehicle transmission and driveline systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of light vehicle transmission and driveline systems
- types, functions, operations and limitations of light vehicle transmission and driveline systems and components
- types, functions, operations and limitations of diagnostic testing equipment relating to light vehicle transmission and driveline systems
- testing procedures for light vehicle transmission and driveline systems, including procedures for accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• interpret workplace instructions and locate and apply information</li> <li>• apply safety requirements, including the use of personal protective equipment</li> <li>• identify and select appropriate diagnosis processes to be performed</li> <li>• complete diagnosis of complex faults on a minimum of three different light vehicle light vehicle transmission and driveline systems with real or simulated faults</li> <li>• document and report outcomes and required actions of diagnosis of complex faults in light vehicle light vehicle transmission and driveline systems.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles with real or simulated light vehicle transmission and</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

driveline system faults

- tools and equipment appropriate for the diagnosis of complex faults in light vehicle transmission and driveline systems
- technical reference information and workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Workplace health and safety (WHS) requirements:</i></b></p>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<p><b><i>Faults</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• faults with: <ul style="list-style-type: none"> <li>• clutches</li> <li>• torque converters</li> <li>• mechanical and automatic transmissions</li> <li>• drive and power take-off shafts</li> <li>• differentials</li> <li>• mechatronic modules and multi-class bus systems</li> <li>• input sensors</li> <li>• output actuators</li> <li>• wiring harnesses</li> <li>• computer systems</li> </ul> </li> <li>• indirect faults caused by the influence of external electrical and electronic systems, which may or may not be faulty in their primary operations</li> <li>• component specifications, component assembly, component damage and system modifications</li> <li>• mechanical and hydraulic system faults.</li> </ul>
<p><b><i>Tests</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• wiring and connector integrity and the operation of input and output devices controlling electronic components and computers</li> <li>• data interpretation relating to direct, indirect and intermittent causes</li> <li>• brake fluid testing</li> </ul>

## ***RANGE STATEMENT***

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• on-road transmission and driveline efficiency testing</li> <li>• component tests.</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• analogue and digital multimeters</li> <li>• lab oscilloscopes</li> <li>• scan tools</li> <li>• test lights and test LEDs</li> <li>• pulse generators</li> <li>• manufacturer and component supplier testing equipment.</li> </ul>
<b><i>Diagnostic processes</i></b> may include:	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures relating to transmission and driveline systems</li> <li>• six-step troubleshooting plan</li> <li>• discover-investigate-fix methodology.</li> </ul>

## **Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical – Transmission

## **Custom Content Section**

Not applicable.

## AURLTZ3001 Diagnose and repair light vehicle emission control systems

### Modification History

Release	Comment
Release 1	Replaces AURT304666A Repair and replace emission control systems  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern light vehicle technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair emission control systems fitted to light vehicles. It involves diagnosing deviations from correct operation, repairing emission control components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the emission control systems of motorcycles, passenger and light commercial vehicles.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a light vehicle emission control system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> related to <b>light vehicle emission control systems</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a light vehicle emission control system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a light vehicle emission control system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to interpret instruments, gauges and other measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of light vehicle emission control systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- operate diagnostic and test equipment
- use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing light vehicle emission control systems
- dangers of testing exhaust gases
- legislation and regulatory requirements relating to light vehicle emission control systems
- identification of motor vehicle emissions and their effects on the environment and health
- operating principles of light vehicle emission control systems
- application, purpose and operation of light vehicle emission control systems, including:
  - effects of associated systems on vehicle emissions
- testing procedures of light vehicle emission control systems
- repair procedures of light vehicle emission control systems
- post-repair testing procedures of light vehicle emission control systems.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of light vehicle emission control systems
- diagnose and repair light vehicle emission control systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- light vehicles with emission control faults relevant to the qualification being sought
- equipment appropriate for the testing of light vehicle emission

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

control systems

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of light vehicle emission control systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• light vehicle emission control system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of light vehicle emission control systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• light vehicle emission control systems service requirements and repair manuals.</li> </ul>
<b>Light vehicle emission</b>	<ul style="list-style-type: none"> <li>• evaporative emission control</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>control systems</i></b> may include:	<ul style="list-style-type: none"> <li>• crankcase ventilation</li> <li>• exhaust gas recirculation</li> <li>• diesel exhaust fluid</li> <li>• catalytic converters</li> <li>• diesel particulate filters.</li> </ul>
<b><i>Diagnostic test</i></b> may include:	<ul style="list-style-type: none"> <li>• exhaust gas analysis</li> <li>• isolation of fault(s)</li> <li>• component inspection and evaluation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• rough running</li> <li>• poor performance</li> <li>• excessive fuel consumption</li> <li>• excessive emissions (particulates, hydrocarbons, carbon monoxide, oxides of nitrogen)</li> <li>• excessive oil consumption.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• exhaust gas colour assessment</li> <li>• exhaust gas composition analysis</li> <li>• on-board diagnostic system assessment procedures.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Light Vehicle
<b>Unit sector</b>	Technical – Emission and Exhaust

**Custom Content Section**

Not applicable.

## AURMBA2001 Transport a light competition vehicle and support equipment

### Modification History

Release	Comment
Release 1	Replaces AURM240173A Transport a light competition vehicle and support equipment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to prepare support equipment and a competition vehicle for transportation.</p> <p>It requires the ability to select, prepare and pack the tools and equipment, prepare and fit transportation devices, components and covers to a competition vehicle, and load and unload the tooling, equipment and competition vehicle.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who prepare support equipment, tools and competition vehicles for transportation in a motorsports environment.</p> <p>For the purposes of this unit of competency, light competition vehicles are vehicles under 300 kg unladen weight, such as go-carts, motorbikes, mountain bikes and jet skis.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare specific tooling and equipment needed for an event	<ul style="list-style-type: none"><li>1.1. Use team instructions/specifications and category rules and supplementary regulations to specify job requirements, including configuration, quality, equipment and quantities</li><li>1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs throughout the work</li><li>1.3. Select specific tooling and equipment needed for an event</li><li>1.4. Pack and secure tooling and equipment to avoid damage during transportation</li><li>1.5. Check equipment listing and account for resources</li></ul>
2. Load and secure competition vehicle and equipment for transportation	<ul style="list-style-type: none"><li>2.1. Compile checklist for resources and vehicle securing</li><li>2.2. Conduct loading according to team procedures</li><li>2.3. Safely secure vehicle and equipment and check mechanisms</li><li>2.4. Store hazardous material in accordance with team requirements</li><li>2.5. Secure tailgates, ramps, doors and bins</li></ul>
3. Unload competition vehicle and support equipment	<ul style="list-style-type: none"><li>3.1. Unload light competition vehicle according to team procedures</li><li>3.2. Unload tooling and equipment according to team procedures</li><li>3.3. Clean transport vehicle and prepare for subsequent use</li><li>3.4. Report problems to appropriate person</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to lifting equipment
- communication skills to the level required to communicate ideas and information to enable organisation of tooling and equipment and reporting of progress against schedule
- literacy skills to the level required to collect, organise and understand information related to storage and transportation of dangerous goods and hazardous chemicals, team tool and equipment requirements, and event scheduling and location details
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and estimate material requirements required for the work
- problem-solving skills to the level required to use checking and inspection techniques to maximise space utilisation
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including loading and unloading sequence, to avoid backtracking or workflow interruptions

#### Required knowledge

Required knowledge includes:

- storage and transportation of hazardous chemicals and dangerous goods methods and equipment
- competition vehicle transportation preparation methods
- competition vehicle security principles
- load distribution principles
- loading and unloading techniques
- securing methods and equipment
- record keeping techniques
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to preparing competition vehicles and support equipment for transportation, including manual handling and loading heavy equipment

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules, and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly load and unload a minimum of one (1) light competition vehicle and support equipment in differing conditions:
  - weather
  - day or night
  - terrain conditions
  - load lists
- work with and around other team members
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and

**EVIDENCE GUIDE**

	<p>disability.</p> <ul style="list-style-type: none"> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>process equipment, material, work instructions and deadlines</li> <li>access to a competition vehicle, transporters and associated support equipment</li> <li>lifting and materials handling equipment</li> <li>team procedures</li> <li>securing equipment guidelines.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

**RANGE STATEMENT**

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Loading of the light competition vehicle**

Loading of the light competition vehicle may include:

- removing fluids, including fuel
- disconnecting battery/power supply
- gear position

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing, including closed-in shoes, long trousers, handling gloves and other equipment
- safety equipment
- first aid equipment
- hazard and risk control
- control of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- material safety management systems
- manufacturer/component supplier specifications
- local safe operating procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- duty of care
- health regulations

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• competition vehicle</li><li>• transporters and associated support equipment</li><li>• materials handling equipment</li></ul>
<b>Specific transportation devices, components and covers</b>	Specific transportation devices, components and covers may include: <ul style="list-style-type: none"><li>• anti-rub devices</li><li>• blanking plugs (e.g. exhaust)</li><li>• guards</li><li>• air filter covers</li><li>• vehicle covers</li><li>• transportation tyres and wheels</li></ul>
<b>Information and procedures</b>	Information and procedures may include: <ul style="list-style-type: none"><li>• controlling body rules, category rules and supplementary regulations</li><li>• event scheduling and location details</li><li>• team procedures and standards related to:<ul style="list-style-type: none"><li>• competition vehicle transportation and security competition vehicle assembly</li><li>• reporting and communication</li><li>• use of tooling and equipment</li><li>• emergency service contacts and team persons emergency contacts</li><li>• team emergency and event procedures for accidents or injury</li></ul></li><li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li><li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Support and Logistics
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## AURMBA3002 Load and unload a competition vehicle and support equipment

### Modification History

Release	Comment
Release 1	Replaces AURM340205A Load and unload a competition vehicle and support equipment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to prepare, load and unload support equipment and a competition vehicle for transportation.</p> <p>It requires the ability to select, prepare and pack tools and equipment, prepare and fit transportation devices, components and covers to a competition vehicle and load and unload the tooling, equipment and competition vehicle.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who prepare support equipment, tools and competition vehicles for transportation in a motorsports environment.</p> <p>For the purpose of this unit of competency a competition vehicle is an automobile over 300 kg unladen weight, which competes in any event of a competitive nature.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare specific tooling and equipment needed for an event	<ul style="list-style-type: none"><li>1.1. Clarify job requirements using team instructions, specifications, category rules and supplementary regulations, including configuration, quality, equipment and quantities</li><li>1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs throughout the work</li><li>1.3. Select specific tooling and equipment needed for an event</li><li>1.4. Pack and secure tooling and equipment to avoid damage during transportation</li><li>1.5. Check equipment listing and account for resources</li></ul>
2. Prepare competition vehicle for transportation	<ul style="list-style-type: none"><li>2.1. Clean competition vehicle and prepare for transportation</li><li>2.2. Fit specific transportation devices, components and covers</li><li>2.3. Identify secure locations on vehicle and transporters</li><li>2.4. Report problems with required equipment or vehicle to appropriate persons</li></ul>
3. Load and secure competition vehicle and equipment for transportation	<ul style="list-style-type: none"><li>3.1. Compile checklist for resources and vehicle securing</li><li>3.2. Conduct loading to team procedures</li><li>3.3. Safely secure vehicle and equipment and check mechanisms</li><li>3.4. Store hazardous material in accordance with legislative requirements</li><li>3.5. Secure transporters tailgates/ramps and doors/bins</li></ul>
4. Unload competition vehicle and support equipment	<ul style="list-style-type: none"><li>4.1. Unload competition vehicle according to team procedures</li><li>4.2. Unload tooling and equipment according to team procedures</li><li>4.3. Clean transporters and prepare for subsequent use</li><li>4.4. Complete team/event documentation</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to lifting and securing equipment
- communication skills to the level required to communicate ideas and information to enable organisation of tooling and equipment and reporting of progress against schedule
- literacy skills to the level required to collect, organise and understand information related to storage and transportation of dangerous goods and hazardous chemicals, team tool and equipment requirements, and event scheduling and location details
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and estimate material requirements required for the work
- problem-solving skills to the level required to use checking and inspection techniques to maximise space utilisation
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including loading and unloading sequence, to avoid backtracking or workflow interruptions

#### Required knowledge

Required knowledge includes:

- storage and transportation of hazardous chemicals and dangerous goods methods and equipment
- competition vehicle transportation preparation methods
- competition vehicle security principles
- load distribution principles
- loading and unloading techniques
- securing methods and equipment
- record keeping techniques
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to preparing competition vehicles and support equipment for transportation, including manual handling and loading heavy equipment

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly prepare, load and unload a minimum of one (1) competition vehicle and support equipment on two (2) occasions in differing conditions
- work with and around other team members
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - transporter over 4.5 tonne unladen
  - competition vehicles
  - process equipment, materials, work instructions and

<b>EVIDENCE GUIDE</b>	
	<p>deadlines</p> <ul style="list-style-type: none"> <li>• access to a competition vehicle, transporters and associated support equipment</li> <li>• lifting and materials handling equipment</li> <li>• team procedures</li> <li>• securing equipment guidelines.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

**RANGE STATEMENT****Preparation of the competition vehicle**

Preparation of the competition vehicle may include:

- applying vehicle-specific transportation requirements
- removing fluids, including fuel
- disconnecting battery/power supply
- downloading data
- gear position
- other transportation requirements necessary for transportation by a third party via means such as road freight, air, rail or sea

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing, including closed-in shoes, long trousers, handling gloves and other equipment
- safety equipment
- first aid equipment
- hazard and risk control
- management of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements
- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- confidentiality and privacy

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> <li>• vehicle transportation</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• transporter over 4.5 tonne tare weight and associated support equipment</li> <li>• material and manual handling equipment</li> <li>• winches</li> <li>• ratchet straps and tie down straps</li> </ul>
<b>Specific transportation devices, components and covers</b>	<p>Specific transportation devices, components and covers may include:</p> <ul style="list-style-type: none"> <li>• anti-rub devices</li> <li>• blanking plugs (e.g. exhaust)</li> <li>• guards</li> <li>• air filter covers</li> <li>• vehicle covers</li> <li>• transportation tyres and wheels</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to: <ul style="list-style-type: none"> <li>• competition vehicle transportation and security competition vehicle assembly</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier</li> </ul>

**RANGE STATEMENT**

	<p>specifications and application procedures for test equipment and material</p> <ul style="list-style-type: none"><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Support and Logistics
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## AURMCA5001 Manage motorsport team media liaison

### Modification History

Release	Comment
Release 1	Replaces AURM542538A Manage motorsport team media liaison Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to identify team media requirements and limitations, prepare media information, issue media information, arrange media interviews and evaluate publicity benefits.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involves all aspects of liaising with the media on behalf of a motorsport team and supporting team members with media interviews and appearances. It includes researching the media liaison needs of the team and the most appropriate media outlets, and preparation of a budget to support media liaison activities.</p> <p>Tasks require individuals to demonstrate discretion, judgement and problem-solving skills in the development of media releases and arrangement of media interviews.</p> <p>Competence may be demonstrated in a motorsport team workplace, a simulated environment, or workplaces of enterprises supporting and working closely with motorsport teams.</p>
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify team media requirements and limitations	<p>1.1.Desired outcomes of media liaison are identified in relation to team goals</p> <p>1.2.Limitations on information to be provided are identified in accordance with team requirements, confidentiality, ethical conduct and promotion partner requirements</p> <p>1.3.Media liaison budget is developed</p> <p>1.4.Media outlets and persons are researched and choices made according to team requirements, ethical conduct and promotional partner requirements</p>
2. Prepare media information	<p>2.1.Media suitable for promotional strategy and team requirements is selected</p> <p>2.2.Specific media outlet information needs are researched</p> <p>2.3.Media needs/requests are considered in light of team objectives, confidentiality requirements and ethical issues</p> <p>2.4.Team information and performance statistics are researched and documented</p> <p>2.5.Information prepared is clear, succinct and appropriate to target audience</p> <p>2.6.Information prepared meets team and media outlet needs and industry ethics</p>
3. Issue media information	<p>3.1.Media persons are contacted and release timing arrangements made</p> <p>3.2.Team management approval is obtained and information provided to media outlet</p> <p>3.3.Promotional partner representatives are advised of release details</p>
4. Arrange media interviews	<p>4.1.Media persons are contacted and requirements negotiated</p> <p>4.2.An interview schedule and agenda is determined</p> <p>4.3.Material for interviews is researched and prepared</p> <p>4.4.Team persons are briefed and coached in presentation techniques where required</p> <p>4.5.Team management are regularly informed of arrangements and outcomes</p> <p>4.6.Promotional partner representatives are advised of interview details</p>

ELEMENT	PERFORMANCE CRITERIA
5. Evaluate publicity benefits	<ul style="list-style-type: none"><li>5.1.Exposure statistics are obtained from media outlets</li><li>5.2.Promotional partner feedback on media release/interview is obtained</li><li>5.3.Data and feedback is analysed to assess effectiveness</li><li>5.4.Outcomes are measured against media liaison budget and team objectives</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to media, team and promotional partner publicity requirements
- communicate ideas and information to enable effective team appearances and information dissemination
- plan and organise activities including team member media appearances
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to set-up scheduling and operate budget
- use knowledge of scenario planning, logistics and differing requirements to meet team, promotional partner and media outlet needs
- use workplace technology, including facsimiles, telephones and computer software related to planning and information presentation

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations
- workplace health and safety (WHS) requirements, including state/territory and federal legislation
- ethical advertising legislation and code of practice
- communication principles and techniques
- presentation techniques
- media content requirements
- interview techniques



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply controlling body and category rules and supplementary regulations
- apply safety requirements including the use of personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - achieve required outcomes within team time and quality standards
  - develop media releases for a minimum of three (3) types of media
- arrange a minimum of two (2) media appearances for team persons. Appearances must be for two (2) types of media, which may include:
  - radio
  - television
  - live appearance at an event
  - guest speaker
- conduct work to quality and timeliness standards
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

- Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.
- Assessment of this competence may include project related tasks and require portfolios or other forms of indirect evidence of process.
- Access to controlling body rules, category rules and supplementary regulations and legislation as identified in the Range Statement.

#### Method of assessment

- Assessment methods must confirm consistency of

**EVIDENCE GUIDE**

	<p>performance over time and in a range of workplace contexts.</p> <ul style="list-style-type: none"> <li>• Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>• Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Research team media needs</b>	<p>Research of team media needs includes:</p> <ul style="list-style-type: none"> <li>• clarification of team goals and objectives with team members</li> <li>• identification of promotional partner expectations</li> <li>• consideration of ethical issues in advertising and promotion</li> </ul>
<b>Media</b>	<p>Media may include</p> <ul style="list-style-type: none"> <li>• print (local, community, daily newspapers, magazines, industry publications)</li> <li>• television</li> <li>• radio (mainstream, community)</li> <li>• internet</li> </ul>
<b>Media releases</b>	<p>Media releases include information prepared for dissemination through:</p> <ul style="list-style-type: none"> <li>• print (e.g. newspaper and magazine)</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• electronic (e.g. radio, television and internet) media</li> </ul>
<b>Media interviews</b>	<p>Media interviews may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• radio</li> <li>• television</li> <li>• internet video clip interviews</li> </ul>
<b>Promotional partners</b>	<p>Promotional partners include:</p> <ul style="list-style-type: none"> <li>• existing or potential partners that are an external individual or organisation, providing financial or in-kind support to a motorsport team.</li> </ul> <p>Promotional partners may also be termed 'sponsors' or 'business partners'</p>
<b>Promotional activities and follow-up</b>	<p>Promotional activities and follow-up includes:</p> <ul style="list-style-type: none"> <li>• liaison with media, promotional partners/sponsors and dissemination of team performance information</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements include:</p> <ul style="list-style-type: none"> <li>• state/territory and federal legislation</li> <li>• controlling body requirements</li> <li>• manufacturer specifications and local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	<p>Work is carried out in accordance with legislative obligations (including environmental requirements), health regulations, manual handling procedures and team insurance requirements</p>
<b>Resources</b>	<p>Resources may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• a computer and word processing software</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures relating to dissemination of information and media appearances</li> <li>• task instructions including worksheets, checklists and plans</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• team procedures relating to reporting and communication</li><li>• legislation regarding ethical advertising</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Sales and Marketing
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## **AURMCA5002 Manage motorsport team promotional partnerships and marketing**

### **Modification History**

<b>Release</b>	<b>Comment</b>
<b>Release 1</b>	Replaces AURM542638A Manage motorsport team promotional partnerships and marketing Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to determine opportunities and requirements in relation to marketing the team and attracting and managing promotional partnerships.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit requires individuals to demonstrate discretion, judgement and problem-solving skills in researching opportunities and devising strategies.</p> <p>Competence may be demonstrated in a motorsport team workplace, a simulated environment, or workplaces of enterprises supporting and working closely with motorsport teams.</p>
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research team marketing opportunities and promotional partner requirements	1.1. Team strengths, weaknesses, opportunities and threats (SWOT) are identified, analysed and documented 1.2. Team members and other parties are consulted and specialist marketing advice is sought where necessary and opportunities/requirements are documented 1.3. Promotional partner requirements are researched and documented 1.4. Principles, policies and strategic direction of the team are identified and documented to enable marketing effort to be focused 1.5. Workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs, are observed throughout the work
2. Devise and implement a team marketing strategy	2.1. Promotional strategies emphasising team strengths are analysed with team members 2.2. The legal, ethical and environmental constraints of the market are identified and their effect on marketing objectives determined 2.3. Promotional strategies are researched and a marketing strategy, including measurable performance targets, is developed and documented 2.4. Risk management strategies are developed and documented 2.5. Team members are briefed on their roles and responsibilities
3. Prepare promotional partnership proposals	3.1. Team funding/sponsorship amount and type required is determined 3.2. Networks for funding/sponsorship are researched and developed in line with the policies, aims and objectives of the team 3.3. Potential promotional partners are identified on the basis of supporting the principles and policies of the team and approached with the aim of forming a promotional partnership 3.4. Potential promotional partner requirements are researched and documented 3.5. Benefits to the promotional partner are identified and documented 3.6. Information regarding opportunities and benefits is prepared in a professional format and distributed to

ELEMENT	PERFORMANCE CRITERIA
	potential promotional partners
4. Present to promotional partners	4.1. Follow-up is conducted with promotional partner persons to arrange meeting details 4.2. Presentations and supporting material specific to potential promotional partners are prepared 4.3. Introductory/supporting material is forwarded prior to the meeting 4.4. Meeting with potential promotional partner is attended and presentation is conducted 4.5. Follow-up information is supplied
5. Coordinate promotional partnership activities	5.1. Written contracts/agreements are made with the promotional partner, including full details of the commitments made by both parties 5.2. Team members are briefed on details and commitments of promotional partnership arrangements 5.3. Activities are organised in accordance with promotional partnership agreements and agreements made are honoured 5.4. Activities are monitored and evaluated in terms of team and promotional partner objectives 5.5. Feedback is provided to and requested from promotional partner as required 5.6. Payments from promotional partners and other contract formalities are actioned and monitored

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to market information and promotional partner/s
- communicate ideas and information to enable effective presentation of proposals and strategies
- plan and organise activities including proposal and strategy presentation

## **REQUIRED SKILLS AND KNOWLEDGE**

- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly determine financial requirements and benefits
- use knowledge of group dynamics, scenario planning and the motorsport industry to match team and potential promotional partner requirements
- use workplace technology related to planning and presentation including computer software

### **Required knowledge**

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations
- WHS requirements, including state/territory and federal legislation, material safety management systems and local safe operating procedures
- legislation and codes of practice relating to ethical advertising
- intellectual property and copyright principles and practices
- communication principles
- marketing plan development
- presentation techniques

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> <li>interpret and apply controlling body and category rules and supplementary regulations</li> <li>apply safety requirements, including the use of personal protective equipment</li> <li>follow task instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>minimise the risk of injury to self or others</li> <li>achieve required outcomes within team time and quality standards</li> </ul> </li> <li>prepare and present a minimum of two (2) promotional proposals. Each proposal is to include, as a minimum: <ul style="list-style-type: none"> <li>a profile of the team and members</li> <li>team achievements</li> <li>proposed partnership arrangements</li> <li>marketing strategy</li> <li>benefits to promotional partner</li> </ul> </li> <li>conduct work to quality and timeliness standards</li> <li>work effectively with others</li> <li>modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.</li> <li>Assessment of this competence may include project related tasks and require portfolios or other forms of indirect evidence.</li> <li>Access to controlling body rules, category rules and supplementary regulations and legislation as identified in the Range Statement.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</li> </ul>

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>• Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Promotional partners**

Promotional partners include:

- existing or potential partners that are an external individual or organisation, providing financial or in-kind support to a motorsport team

Promotional partners may also be termed 'sponsors' or 'business partners'

Teams may have more than one promotional partner

There may be one major or exclusive promotional partner or a number of smaller promotional partners

**WHS requirements**

WHS requirements include:

- state/territory and federal legislation
- material safety management systems
- controlling body requirements
- manufacturer specifications and local safe

<b>RANGE STATEMENT</b>	
	operating procedures
<b>Legislative requirements</b>	Work is carried out in accordance with legislative obligations (including environmental requirements), health regulations and team insurance requirements
<b>Resources</b>	Resources may include: <ul style="list-style-type: none"> <li>• a computer and word-processing, presentation and spreadsheet software</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team policies and procedures on customer relations</li> <li>• contracted promotional partner requirements</li> <li>• task instructions including worksheets, checklists and plans</li> <li>• team procedures relating to reporting and communication</li> <li>• manufacturer/component supplier specifications and application procedures for presentation material</li> <li>• team policies and procedures relating to confidentiality and protection of intellectual property</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Sales and Marketing
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## AURMDA2001 Develop and update motorsport industry knowledge

### Modification History

Release	Comment
Release 1	Replaces AURMO2001A Develop and update motorsport industry knowledge Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to develop and update general knowledge of the motorsport industry, including industry structure, event categories and classifications, rules and regulations, and roles of officials and volunteers. This knowledge underpins effective participation and officiating in all motorsport events.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake officiating, support or voluntary roles in motorsport events, including practice sessions.</p> <p>The unit acknowledges the need for individuals who participate in the motorsport industry to be able to source, develop and apply current and emerging information about the industry in order to effectively carry out their role. The unit is relevant to those individuals working in an officiating and voluntary support role. More specialised and advanced motorsport officiating, event organisation and management knowledge is found in other units.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research information on the structure and operation of the motorsport industry	<p>1.1. Correctly identify sources of information about the motorsport industry, including sources providing information relating to industry structure, major industry bodies or associations, different motorsport types and disciplines, event protocols, rules and regulations, competition calendars and participation opportunities</p> <p>1.2. Access sources of information and establish networks and key contacts to obtain information</p>
2. Source and apply information on ethical and legal issues for motorsport officiating	<p>2.1. Obtain information on ethical and legal issues to assist effective work performance</p> <p>2.2. Ensure own status and conduct complies with legal obligations and ethical industry practices</p>
3. Explore opportunities to participate and update motorsport knowledge	<p>3.1. Compile an annual calendar of events for a motorsport discipline</p> <p>3.2. Describe the range of officiating and volunteer roles in motorsport events</p> <p>3.3. Identify the roles best suited to own level of knowledge, skills and interest</p> <p>3.4. Identify and use a range of opportunities to improve own performance and update knowledge of the motorsport industry</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to operate information and communications technology to access information
- communication skills to the level required to communicate effectively with other motorsport industry personnel, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to read and interpret a wide variety of

**REQUIRED SKILLS AND KNOWLEDGE**

information sources

- research skills to the level required to source information on motorsport industry issues within a defined range
- problem-solving skills to the level required to identify needs and to organise thoughts and information in a systematic manner

**Required knowledge**

Required knowledge includes:

- structure and hierarchy of the motorsport industry
- participation opportunities within the motorsport industry
- general knowledge of different types of motorsports
- in depth knowledge of a specific discipline, including:
  - competition categories and scope
  - event rules and regulations, including supplementary regulations
  - types and roles of officials and volunteers
  - protocols and procedures for communicating with stewards, officials and other relevant persons
  - key organisations and associations
- legal and ethical issues that impact on officials and volunteers
- ethical and unethical conduct in officiating
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS) and environmental regulations, relevant to officiating or volunteering in a motorsport event
- organisational policies and procedures, including safety requirements, personal presentation, communication, reporting and recording procedures, and organisation and planning processes, related to officiating or volunteering in a motorsport event

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- explain the ways in which industry knowledge can be applied to maximise effective performance as an official or volunteer
- communicate effectively with others to source, develop and share motorsport information
- describe the organisational structure, competition categories, event rules and regulations, and roles of officials and volunteers in at least one (1) motorsport discipline
- apply knowledge of motorsport protocols, rules and regulations in specific motorsport event contexts.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability
- The following resources should be made available:
  - access to information and communication technology, including the internet
  - access to current sources of motorsport industry information
  - NCR and event supplementary regulations
  - industry magazines and related publications.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• case studies and problem-solving to assess application of knowledge in different motorsport event contexts</li> <li>• questions to assess knowledge of different aspects of the motorsport industry as detailed in the Evidence Guide</li> <li>• review of portfolios of evidence and third-party reports of on-the-job performance by the candidate.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process/</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances/</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role/</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsports**

Motorsports may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and

<b>RANGE STATEMENT</b>	
	off-road events <ul style="list-style-type: none"> <li>club, state/territory, national and international events</li> </ul>
<b>Opportunities to update knowledge</b>	Opportunities to update knowledge include: <ul style="list-style-type: none"> <li>industry seminars</li> <li>training courses</li> <li>industry association membership</li> <li>participation in industry association activities</li> <li>informal networking with colleagues</li> <li>reading industry journals</li> <li>internet research</li> </ul>
<b>Legal issues</b>	Legal issues may include: <ul style="list-style-type: none"> <li>public liability</li> <li>duty of care</li> <li>licensing</li> <li>risk management</li> <li>WHS</li> </ul>
<b>Professional and ethical standards</b>	Professional and ethical standards for officials may include: <ul style="list-style-type: none"> <li>dress, personal presentation, preparedness and personal conduct</li> <li>respect for the rights and responsibilities of others</li> <li>commitment and responsibility to safety</li> <li>confidentiality, impartiality and no conflict of interest</li> <li>contribution to the overall effectiveness of the team</li> <li>self-improvement through feedback, performance appraisal and training</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>hardcopy and electronic media</li> <li>verbal, written and graphical information</li> <li>safe work procedures related to motorsport officiating and volunteering</li> <li>regulatory/legislative requirements pertaining to motorsport officiating and volunteering</li> <li>National Competition Rules (NCR) and event supplementary regulations</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>motorsport organisation manuals, code of conduct, policies and procedures</li> <li>controlling body rules, category rules and supplementary regulations</li> <li>event policies and procedures relating to work areas, authorities and lines of communication</li> <li>task instructions, including briefings, worksheets, checklists and plans</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>personal protective equipment and clothing</li> <li>safety equipment</li> <li>first aid equipment</li> <li>hazard and risk control</li> <li>elimination of hazardous materials and substances</li> <li>manual handling, including shifting, lifting and carrying</li> <li>emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>award and enterprise agreements</li> <li>industrial relations</li> <li>confidentiality and privacy</li> <li>WHS</li> <li>the environment</li> <li>equal opportunity</li> <li>anti-discrimination</li> <li>relevant industry codes of practice</li> <li>duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management</li> <li>noise</li> <li>habitat, flora and fauna protection</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity, and anti-discrimination policies and procedures</li><li>• industry codes of practice</li><li>• safe work procedures</li><li>• communication, reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Officiating
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## AURMDA2002 Assist with motorsport officiating duties

### Modification History

Release	Comment
Release 1	Replaces AURMO2004A Assist with motorsport officiating duties Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to act as a trainee official or volunteer in a motorsport event.</p> <p>It requires a basic knowledge of the conduct of the applicable motorsport category and its rules and regulations.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who perform the duties of a trainee official or volunteer in a motorsport event including practice sessions.</p> <p>The person will be assigned work under direct supervision of an experienced person as part of a work team.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Make pre-event preparations	<ul style="list-style-type: none"><li>1.1. Read documentation supplied by the event organiser and clarify any items not understood</li><li>1.2. Identify and prepare personal requirements and equipment and check for safe and operational condition</li><li>1.3. Prepare for conditions on the day, including weather, nutrition and personal comfort</li><li>1.4. Attend pre-event briefing session and confirm own role and responsibilities</li></ul>
2. Carry out assigned duties	<ul style="list-style-type: none"><li>2.1. Confirm with supervisor the designated work practices for carrying out assigned duties safely and effectively</li><li>2.2. Follow instructions carefully and remain alert to safety hazards and risks</li><li>2.3. Recognise own limitations and seek advice and help, when necessary</li><li>2.4. Carry out all activities according to event rules and regulations, official's codes of practice, organisational safety and emergency procedures</li></ul>
3. Review and analyse performance	<ul style="list-style-type: none"><li>3.1. Attend post-event debriefing session</li><li>3.2. Reflect upon own performance and seek feedback to identify areas for improvement</li><li>3.3. Develop personal plan in consultation with support personnel for improving officiating performance</li><li>3.4. Undertake additional training in deficient areas to improve performance</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- communication skills to the level required to receive and clarify information and instructions from other motorsport personnel, to seek advice and feedback on own

**REQUIRED SKILLS AND KNOWLEDGE**

- performance, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to read and understand information related to the conduct of the event, rules and regulations, workplace health and safety (WHS) requirements and safe work practices
  - problem-solving skills to the level required to recognise and respond appropriately to actual and potential problems and emergencies
  - team skills to the level required to work effectively and cooperatively with others

**Required knowledge**

Required knowledge includes:

- organisational structure of the motorsport event, including authority and communication lines
- basic knowledge of rules and regulations pertaining to the motorsport event
- professional and ethical responsibilities of officiating
- personal preparations, resources and equipment required for officiating
- potential risks associated with motorsport officiating
- organisational policies and procedures, including ethical requirements, emergency response, reporting and recording procedures, and work organisation and planning processes, related to motorsport officiating

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- complete preparatory activities in a systematic manner
- follow safe work practices as directed by supervisor
- communicate effectively with other personnel involved in the event
- develop and implement a plan for improving own officiating performance
- act as a trainee official or volunteer in at least two (2) motorsport events.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to suitable motorsport events
  - all documentation, including rules and regulations, safety procedures and event procedures
  - all equipment, including personal safety equipment.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and

**EVIDENCE GUIDE**

	<p>Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsport**

Motorsport may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, road and off-road events
- club, state/territory, national and international events

**Rules and regulations**

Motorsport rules and regulations may include:

- National Competition Rules (NCR)
- National Rally Code (NRC)
- event supplementary regulations
- association and club rules, regulations and

<b>RANGE STATEMENT</b>	
	<p>codes</p> <ul style="list-style-type: none"> <li>• Officials Code of Conduct</li> <li>• Federation Internationale de l'Automobile (FIA)</li> <li>• Federation Internationale Motocycliste (FIM)</li> </ul>
<b>Professional and ethical standards</b>	<p>Professional and ethical standards for officials may include:</p> <ul style="list-style-type: none"> <li>• dress, personal presentation, preparedness and personal conduct</li> <li>• respect for the rights and responsibilities of others</li> <li>• commitment and responsibility to safety</li> <li>• confidentiality, impartiality and no conflict of interest</li> <li>• contribution to the overall effectiveness of the team</li> <li>• self-improvement through feedback, performance appraisal and training</li> </ul>
<b>Pre-event preparation</b>	<p>Pre-event preparations may include:</p> <ul style="list-style-type: none"> <li>• corporate dress requirements</li> <li>• personal protective equipment</li> <li>• event documentation and information</li> <li>• personal needs, such as nutrition, medication and protection from the elements</li> <li>• travel and accommodation arrangements</li> </ul>
<b>Information and documents</b>	<p>Sources of information and documents may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event policies and procedures relating to work areas, authorities and lines of communication</li> <li>• task instructions, including briefings, worksheets, checklists and plans</li> <li>• industry codes of practice</li> <li>• instructions issued by authorised internal or external persons</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory</p>

**RANGE STATEMENT**

	<p>legislation, regulations, certification requirements and codes of practice, and may include legislation related to:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• habitat, flora and fauna protection</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Officiating
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## AURMDA3004 Recover a motorsport vehicle

### Modification History

Release	Comment
Release 1	Replaces AURMO3007A Recover a motorsport vehicle Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to recover damaged or broken-down vehicles in motorsport events in a safe and timely manner without causing further damage to the vehicle.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who perform vehicle recovery operations in motorsport events, including practice sessions. This can include carrying out pre-operational checks on recovery vehicles and equipment, driving a recovery vehicle carrying/towing a load, operating ancillary equipment, and completing documentation.</p> <p>Persons achieving competence in this unit will need to fulfil the applicable legislation and relevant regulations covering the operation of the tow truck and related equipment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess situation and plan recovery	1.1. Assess the equipment requirements and techniques to carry out the recovery 1.2. Confirm availability of recovery vehicle and associated equipment and personnel to carry out the job 1.3. Identify potential hazards at the recovery site and during the recovery operation and take appropriate precautions and strategies to manage and control the risks involved 1.4. Identify the type of vehicle to be towed and determine critical aspects of vehicle design that could impact recovery operations 1.5. Plan the recovery operation with consideration for security and safety of persons, vehicles and property
2. Set up and secure the recovery situation	2.1. Set up and secure the recovery situation in accordance with the established action plan 2.2. Deploy safety equipment, barriers and warning signs in accordance with operating procedures and regulatory requirements 2.3. Manage spectators and other personnel in the vicinity of the towing situation in accordance with safety procedures and security requirements 2.4. Manoeuvre vehicle to be recovered into position using appropriate equipment and standard operating procedures 2.5. Prepare the vehicle for recovery without causing damage to any component or system, as far as possible
3. Recover vehicle	3.1. Use personal protective equipment in accordance with standard operating procedures and workplace health and safety (WHS) requirements 3.2. Operate recovery equipment in accordance with manufacturer specifications, safe working practices and regulatory requirements 3.3. Identify attachment points and check the weight of the vehicle being recovered to ensure that they are consistent with established guidelines, regulatory requirements and the permissible safe working loads for the recovery vehicle and its associated equipment 3.4. Secure the recovered vehicle using appropriate winches, ropes and cables in accordance with

ELEMENT	PERFORMANCE CRITERIA
	<p>relevant load restraint regulations and standard operating procedures</p> <p>3.5.Safely convey and unload the recovered vehicle to the designated location</p>
4. Clean up and complete reports	<p>4.1.Clear the recovery area and its near vicinity of debris and clean up any spills</p> <p>4.2.Complete recovery vehicle log in accordance with organisational requirements and regulations</p> <p>4.3.Complete incident report and official forms related to recovery operations</p>
5. Check and maintain equipment	<p>5.1.Check recovery vehicle and equipment for operational effectiveness in accordance with manufacturer specifications and standard operating procedures</p> <p>5.2.Carry out routine servicing and lubrication checks of the recovery vehicle and its equipment in accordance with the maintenance and service schedule</p> <p>5.3.Identify and tag faulty equipment or components that may affect the safe operation of the vehicle and report to the appropriate personnel for rectification</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to operate recovery vehicle and associated tools and equipment
- communication skills to the level required to understand and relay technical information and instructions, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to read and interpret instructions, procedures, regulations, signs, charts, maps and labels, relevant to recovery operations
- numeracy skills to the level required to calculate loads, assess tolerances and apply accurate measurements
- problem-solving skills to the level required to modify activities and take

**REQUIRED SKILLS AND KNOWLEDGE**

appropriate initiatives depending on differing recovery contexts, risk situations and environments

- team skills to the level required to ensure completion of tasks in a safe and timely manner

**Required knowledge**

Required knowledge includes:

- procedures for recovery type, preparation of vehicles, recovery procedure and worksite clean-up requirements
- recovery vehicle controls, instruments and indicators and their use
- recovery vehicle handling procedures, both with and without a tow or load
- procedures to be followed in the event of an emergency when operating a recovery vehicle, including the use of portable fire extinguishers
- pre-operational checks carried out on a recovery vehicle and its equipment and related action that should be taken
- communication procedures, including reporting lines within the motorsport environment
- range of potential workplace hazards, risks and emergency situations
- basic principles of risk management
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environmental regulations, relevant to recovering vehicles in a motorsport event
- organisational policies and procedures, including safety requirements, hazard identification, risk assessment and emergency response procedures, related to recovering vehicles in a motorsport event

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activities in a systematic manner
- complete vehicle recovery procedures safely and without damage to vehicle or equipment
- complete area clean-up
- complete log book and reporting requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to relevant recovery vehicle and equipment
  - access to suitable motorsport events
  - applicable personal protection and safety equipment and resources
  - copies of safe work practices and standard operating procedures.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of

**EVIDENCE GUIDE**

	<p>workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsports**

Motorsports may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international events

**Potential hazards**

Potential hazards at the recovery location may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• other vehicular traffic</li> <li>• live electrical wires</li> <li>• contaminated blood at scene</li> <li>• weather conditions</li> <li>• spilt or leaking oil or fuel (slippery surfaces)</li> <li>• unsafe or damaged equipment</li> <li>• unsafe procedures in the use of recovery equipment</li> <li>• fire</li> <li>• unsafe manual lifting procedures</li> <li>• sharp edges</li> </ul>
<b>Recovery vehicle</b>	<p>Recovery vehicle may include:</p> <ul style="list-style-type: none"> <li>• tow truck</li> <li>• tilt tray</li> <li>• trailer</li> <li>• dolly wheels</li> <li>• low loader</li> </ul>
<b>Safe work practices</b>	<p>Safe work practices may include:</p> <ul style="list-style-type: none"> <li>• use of flashing lights on vehicles</li> <li>• deployment of safety equipment (e.g. warning signs or witch's hats)</li> <li>• strategic positioning of recovery vehicle</li> <li>• use of appropriate personal protective equipment and clothing</li> <li>• checking equipment and isolating, rectifying or reporting any defective equipment</li> <li>• following correct procedures in the event of spilt or leaking fuel or oil</li> <li>• using correct portable firefighting equipment</li> <li>• use of reflective raincoats and vests</li> <li>• correct manual lifting strategies</li> </ul>
<b>Tools and equipment</b>	<p>Tools and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• chains, slings and ropes</li> <li>• safety equipment</li> <li>• towing bar</li> <li>• jack</li> <li>• shovel, broom and spill kit</li> <li>• remote lights, signs, torch and work light</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• air lines and fittings</li> <li>• reduction blocks</li> <li>• communication equipment</li> </ul>
<b>Communication skills</b>	<p>Communication skills to manage the reactions of participants to decisions may include:</p> <ul style="list-style-type: none"> <li>• addressing people politely</li> <li>• clarifying the relevant rule or regulation</li> <li>• presenting information in logical order</li> <li>• refraining from swearing, arguing or fighting</li> <li>• remaining patient</li> <li>• refraining from interrupting</li> <li>• speaking clearly</li> <li>• using language that is not patronising but at a suitable level</li> <li>• using body language and voice in an assertive but not aggressive manner</li> <li>• using non-discriminatory language</li> <li>• using effective listening and speaking skills</li> <li>• verifying what has been said or done and why it has been said or done</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• hardcopy and electronic media</li> <li>• verbal, written and graphical information</li> <li>• safe work procedures related to vehicle recovery and equipment operation</li> <li>• regulatory/legislative requirements pertaining to operating a recovery vehicle</li> <li>• National Competition Rules (NCR) and event supplementary regulations</li> <li>• motorsport organisation manuals, codes of conduct, policies and procedures</li> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event policies and procedures relating to work areas, authorities and lines of communication</li> <li>• task instructions, including briefings, worksheets, checklists and plans</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory</p>

<b>RANGE STATEMENT</b>	
	<p>legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• relevant state/territory roads and traffic authority driving regulations and licence/permit requirements pertaining to the recovery vehicle operations</li> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• habitat, flora and fauna protection</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• industry codes of practice</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• safe work procedures</li><li>• communication, reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Officiating
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## AURMDA3005 Act as a marshal in a motorsport event

### Modification History

Release	Comment
Release 1	Replaces AURMO3006A Act as a marshal in a motorsport event Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform the duties of a marshal as assigned in a motorsport event.</p> <p>It requires the ability to observe event conditions and activities in own area of responsibility and correctly apply rules and regulations, as required, to ensure safety and compliance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the duties of a marshal in a motorsport event.</p> <p>A marshal may perform general duties or be assigned to a specific role, such as paddock marshal, assembly marshal, grid marshal, pit marshal, communications marshal, course marshal or sector marshal.</p> <p>The role of a flag marshal is covered by AURMDA3006 Communicate using flags and signals in a motorsport event.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Make pre-event preparations	<ul style="list-style-type: none"><li>1.1. Read and interpret event documentation, including rules and regulations</li><li>1.2. Ensure all personal documentation is up to date</li><li>1.3. Identify and prepare personal clothing and equipment requirements and check for safe and operational condition</li><li>1.4. Prepare for conditions on the day, including weather, nutrition and personal comfort</li><li>1.5. Attend pre-race briefing session and confirm own role and responsibilities</li></ul>
2. Prepare post	<ul style="list-style-type: none"><li>2.1. Confirm location of allocated post and identity other team members</li><li>2.2. Set up post and any equipment, if required</li><li>2.3. Assess location for risks and plan an emergency escape route</li><li>2.4. Check that communication system is operational</li></ul>
3. Carry out marshalling duties	<ul style="list-style-type: none"><li>3.1. Maintain communication with chief marshal and other official personnel and report, as required</li><li>3.2. Remain vigilant and alert at assigned post to monitor event conditions and respond to flags, signals or announcements</li><li>3.3. Carry out all activities according to event rules and regulations, Officials Code of Conduct, and safety and emergency procedures</li><li>3.4. Respond to emergency situations in accordance with event procedures and within limits of own authority</li><li>3.5. Manage the reactions of participants to decisions and deal with conflict situations in accordance with the rules and regulations</li><li>3.6. Record any incidents or observations to include in final report</li></ul>
4. Finalise duties	<ul style="list-style-type: none"><li>4.1. Check, maintain and return all communication and other equipment</li><li>4.2. Clean and secure marshalling post</li><li>4.3. Prepare a written report for the chief marshal</li><li>4.4. Attend post-meeting debriefing session</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use communication and other equipment required to carry out marshalling duties in a motorsport environment
- communication skills to the level required to receive and convey information and instructions with other motorsport personnel, deal with conflict, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to collect, organise and understand information related to rules and regulations, marshalling duties, workplace health and safety (WHS) requirements and team procedures, related to safety and emergency response
- numeracy skills to the level required to count and measure
- problem-solving skills to the level required to apply rules and regulations, and recognise and respond appropriately to actual and potential problems and emergencies
- team skills to the level required to work effectively and cooperatively with others

#### Required knowledge

Required knowledge includes:

- organisational structure of the motorsport event, including authority and communication lines
- rules and regulations applicable to the motorsport event
- professional and ethical responsibilities of officiating
- responsibilities and tasks of a marshal, and relationship with other officials
- personal preparations, resources and equipment required for officiating
- communication techniques, including radio etiquette and hand signalling
- motorsport flag and light signal types and their meaning
- risks associated with motorsport officiating
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environmental legislation and regulations, relevant to motorsport officiating
- organisational policies and procedures, including ethical requirements, emergency response, reporting and recording procedures, and work organisation and planning processes, related to motorsport officiating

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- complete preparatory activities in a systematic manner
- observe safety procedures and requirements
- assess risks and plan an emergency escape route
- communicate effectively with others using communication equipment and hand signals
- respond to flags, signals and announcements in accordance with instructions and rules and regulations
- carry out the duties of a marshal safely and efficiently in at least two (2) motorsport events
- prepare written reports.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to suitable motorsport events
  - all documentation, including rules and regulations, safety procedures and event procedures
  - all equipment, including communication and personal safety equipment.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of

**EVIDENCE GUIDE**

	<p>Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsport**

Motorsport may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- races and competitions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international events

**Marshalling roles**

Marshalling roles within motorsport can include:

- paddock marshals responsible for controlling entry into and activities within the restricted

<b>RANGE STATEMENT</b>	
	<p>paddock area</p> <ul style="list-style-type: none"> <li>• assembly marshals responsible for controlling the entry and order of vehicles in the marshalling area prior to entering the starting grid</li> <li>• grid marshals responsible for placing vehicles in correct order on the grid, checking for problems at the start and assisting stalled vehicles</li> <li>• pit marshals responsible for monitoring the pit area for safety hazards and breaches of the rules during pit stops</li> <li>• trackside, course and sector marshals responsible for monitoring track conditions, other officials and spectators within their designated areas</li> <li>• recovery and rescue marshals responsible for maintaining equipment and being prepared to respond to emergency situations</li> </ul>
<b>Rules and regulations</b>	<p>Motorsport rules and regulations may include:</p> <ul style="list-style-type: none"> <li>• National Competition Rules (NCR)</li> <li>• National Rally Code (NRC)</li> <li>• event supplementary regulations</li> <li>• technical regulations</li> <li>• association and club rules, regulations and codes</li> <li>• Officials Code of Conduct</li> <li>• international sporting code</li> <li>• Federation Internationale de l'Automobile (FIA)</li> <li>• Federation Internationale Motocycliste (FIM)</li> </ul>
<b>Professional and ethical standards</b>	<p>Professional and ethical standards for officials may include:</p> <ul style="list-style-type: none"> <li>• dress, personal presentation, preparedness and personal conduct</li> <li>• respect for the rights and responsibilities of others</li> <li>• commitment and responsibility to safety</li> <li>• confidentiality, impartiality and no conflict of interest</li> <li>• contribution to the overall effectiveness of the</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>team</p> <ul style="list-style-type: none"> <li>self-improvement through feedback, performance appraisal and training</li> </ul>
<b>Pre-event preparation</b>	<p>Pre-event preparations may include:</p> <ul style="list-style-type: none"> <li>corporate dress requirements</li> <li>personal protective equipment</li> <li>event documentation and information</li> <li>personal needs, such as nutrition, medication and protection from the elements</li> <li>travel and accommodation arrangements</li> </ul>
<b>Information and documents</b>	<p>Information and documents may include:</p> <ul style="list-style-type: none"> <li>controlling body rules, category rules and supplementary regulations</li> <li>event policies and procedures relating to work areas, authorities and lines of communication</li> <li>task instructions, including briefings, worksheets, checklists and plans</li> <li>industry codes of practice</li> <li>instructions issued by authorised internal or external persons</li> <li>material safety data sheets (MSDS)</li> <li>diagrams or sketches</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>award and enterprise agreements</li> <li>industrial relations</li> <li>confidentiality and privacy</li> <li>WHS</li> <li>the environment</li> <li>equal opportunity</li> <li>anti-discrimination</li> <li>duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>personal protective equipment and clothing</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• habitat, flora and fauna protection</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Officiating
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## AURMDA3006 Communicate using flags and signals in a motorsport event

### Modification History

Release	Comment
Release 1	Replaces AURMO3003A Communicate using flags and signals Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to communicate with competitors, officials and other motorsport personnel, using flags and other signalling methods.</p> <p>It requires the ability to observe race and track conditions and correctly apply signalling conventions to communicate warnings, alerts and other information.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake the duties of a flag marshal or equivalent in a motorsport event, including practice sessions.</p> <p>While all officials are required to understand the meaning of flags and signals, it is the responsibility of the flag marshal to know when and how to use flags in accordance with motorsport event rules and regulations.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Make pre-event preparations	<ul style="list-style-type: none"><li>1.1. Read and interpret event documentation, including rules and regulations</li><li>1.2. Identify and prepare personal requirements and equipment and check for safe and operational condition</li><li>1.3. Prepare for conditions on the day, including weather, nutrition and personal comfort</li><li>1.4. Attend pre-race briefing session and confirm own role and responsibilities</li></ul>
2. Prepare post	<ul style="list-style-type: none"><li>2.1. Confirm location of allocated post and identity of other team members</li><li>2.2. If flags are to be used, ensure flag set is complete and lay out flags ready for use</li><li>2.3. If signal lights are to be used, check for correct operation</li><li>2.4. Check and prepare signal boards and related equipment</li><li>2.5. Assess location for risks and plan an emergency escape route</li><li>2.6. Check that communication system is operational</li></ul>
3. Use flags and signals during the event	<ul style="list-style-type: none"><li>3.1. Maintain communication with chief marshal and other official personnel and report, as required</li><li>3.2. Remain vigilant throughout the event to identify need for flags or signals</li><li>3.3. Use flags or signals, when necessary, in accordance with relevant motorsport rules and regulations</li><li>3.4. Carry out all activities according to event rules and regulations, Officials Code of Practice, and safety and emergency procedures.</li></ul>
4. Finalise duties	<ul style="list-style-type: none"><li>4.1. Check, maintain and return all flags and communication equipment</li><li>4.2. Clean and secure marshalling post</li><li>4.3. Prepare a written report for the chief marshal</li><li>4.4. Attend post-meeting debriefing session</li></ul>

## Required Skills and Knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

**Required skills**

Required skills include:

- technical skills to the level required to apply flag and signalling rules and techniques and use communication systems in a motorsport environment
- communication skills to the level required to receive and convey information and instructions with other motorsport personnel, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to collect, organise and understand information related to controlling body rules, category rules and supplementary regulations, workplace health and safety (WHS) requirements and team procedures, related to safety
- numeracy skills to the level required to count and measure
- problem-solving skills to the level required to recognise and respond appropriately to actual and potential problems and emergencies
- team skills to the level required to work effectively and cooperatively with others

**Required knowledge**

Required knowledge includes:

- organisational structure of the motorsport event, including authority and communication lines
- all rules and regulations pertaining to the motorsport event
- professional and ethical responsibilities of officiating
- responsibilities and tasks of a flag marshal, and relationship with other officials
- personal preparations, resources and equipment required for officiating
- communication techniques, including radio etiquette and hand signalling
- motorsport flag and light signal types and their meaning
- flag rules and flagging techniques
- risks associated with motorsport officiating
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environmental legislation and regulations, relevant to motorsport activities
- organisational policies and procedures, including ethical requirements, emergency response, reporting and recording procedures and work organisation and planning processes, related to motorsport officiating

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- complete preparatory activities in a systematic manner
- observe safety procedures and requirements
- assess risks and plan an emergency escape route
- communicate effectively with others using communication equipment and hand signals
- use flags or signalling techniques appropriate to the circumstances and in accordance with rules and regulations
- prepare written reports.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to suitable motorsport events
  - all documentation, including rules and regulations, safety procedures and event procedures
  - all equipment, including flags, communication and personal safety equipment.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.

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	<ul style="list-style-type: none"> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsport**

Motorsport may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international events

**Flags**

Flag rules and techniques include:

- regulation sizes and colours
- single or double flags
- waved or stationary

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• duration of flagging</li> <li>• facing direction and positioning of flag marshal</li> </ul>
<b>Other signals</b>	<p>Other signal methods may include:</p> <ul style="list-style-type: none"> <li>• lights</li> <li>• hand signals</li> <li>• signal boards</li> </ul>
<b>Rules and regulations</b>	<p>Motorsport rules and regulations may include:</p> <ul style="list-style-type: none"> <li>• National Competition Rules (NCR)</li> <li>• National Rally Code (NRC)</li> <li>• event supplementary regulations</li> <li>• Federation Internationale de l'Automobile (FIA)</li> <li>• Federation Internationale Motocycliste (FIM)</li> <li>• association and club rules, regulations and codes</li> </ul>
<b>Professional and ethical standards</b>	<p>Professional and ethical standards for officials may include:</p> <ul style="list-style-type: none"> <li>• dress, personal presentation, preparedness and personal conduct</li> <li>• respect for the rights and responsibilities of others</li> <li>• commitment and responsibility to safety</li> <li>• confidentiality, impartiality and no conflict of interest</li> <li>• contribution to the overall effectiveness of the team</li> <li>• self-improvement through feedback, performance appraisal and training</li> </ul>
<b>Pre-event preparation</b>	<p>Pre-event preparations may include:</p> <ul style="list-style-type: none"> <li>• corporate dress requirements</li> <li>• personal protective equipment</li> <li>• event documentation and information</li> <li>• personal needs, such as nutrition, medication and protection from the elements</li> <li>• travel and accommodation arrangements</li> </ul>
<b>Information and documents</b>	<p>Information and documents may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>supplementary regulations</p> <ul style="list-style-type: none"><li>• event policies and procedures relating to work areas, authorities and lines of communication</li><li>• task instructions, including briefings, worksheets, checklists and plans</li><li>• industry codes of practice</li><li>• instructions issued by authorised internal or external persons</li><li>• material safety data sheets (MSDS)</li><li>• diagrams or sketches</li></ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"><li>• award and enterprise agreements</li><li>• industrial relations</li><li>• confidentiality and privacy</li><li>• WHS</li><li>• the environment</li><li>• equal opportunity</li><li>• anti-discrimination</li><li>• duty of care</li></ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"><li>• personal protective equipment and clothing</li><li>• safety equipment</li><li>• first aid equipment</li><li>• hazard and risk control</li><li>• elimination of hazardous materials and substances</li><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li></ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• habitat, flora and fauna protection</li></ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li><li>• codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Officiating
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## AURMDA3007 Act as a steward in a motorsport event

### Modification History

Release	Comment
Release 1	Replaces AURMO3005A Act as a steward in a motorsport event Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to act as a steward in a motorsport event.</p> <p>It requires strong verbal and written communication skills, extensive knowledge of the conduct of the applicable motorsport category, its rules and regulations and judiciary processes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who perform the duties of a steward in a motorsport event, including practice sessions.</p> <p>The steward is usually appointed by the motorsport controlling body and has the authority to act on their behalf to ensure the event is conducted in compliance with all applicable rules and regulations. This includes ensuring all aspects of the event organisation meet requirements before the event can proceed. During the event, the steward must ensure it is conducted in accordance with the rules and regulations and has the power to stop the event or suspend participants, if necessary. The steward can also adjudicate on protests, disputes or breaches of the rules.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Authorise the commencement of the event	1.1. Evaluate all event documentation for clarity and compliance with controlling body requirements 1.2. Ensure all essential official positions are filled by suitably qualified or experienced people 1.3. Ensure facilities, equipment, personnel and safety arrangements meet controlling body requirements 1.4. Order the commencement of the event
2. Monitor the conduct of the event	2.1. Ensure the meeting is run in accordance with the published program and all applicable rules and regulations 2.2. Maintain communication with the Clerk of Course throughout the conduct of the event 2.3. In consultation with the Clerk of the Course, authorise any modifications to the program or event conditions deemed necessary to meet safety requirements or in exceptional circumstances 2.4. Settle any issue that might arise, and impose penalties, subject to the right of appeal 2.5. Exclude from the event any vehicle deemed to be unsafe or non-compliant and any participant deemed to be unfit 2.6. Order the administration of any vehicle, fuel or other compliance test 2.7. Amend the results in accordance with rules and regulations
3. Adjudicate on protests or disputes	3.1. Notify persons involved to attend the hearing 3.2. Clarify the nature of the protest or dispute 3.3. Identify the applicable rules and regulations 3.4. Hear and evaluate the evidence 3.5. Make decision and impose penalty, if required 3.6. Implement procedures for an appeal, if necessary 3.7. Maintain accurate records of the proceedings and the outcomes
4. Complete final report	4.1. At the conclusion of the meeting, collect all personal notes, event documentation and results on which the report will be based 4.2. Write a report detailing the conduct of the meeting, the results of each competition, and details of any protests, decisions, penalties and appeals

ELEMENT	PERFORMANCE CRITERIA
	<p>4.3. Secure any evidence for appeals or future reference</p> <p>4.4. Submit the report to the controlling body within the designated time after the event</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use communications, information and business technology to access and produce event information and results and maintain contact with event personnel
- communication skills to the level required to gather, interpret and relay information with other stewards, officials and event personnel, to conduct hearings and manage conflict, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to read, interpret and apply information related to event operations, rules and regulations, and to complete detailed written reports
- problem-solving skills to the level required to modify event proceedings to ensure safety, adjudicate protests and disputes, apply relevant rules and regulations and assign penalties
- team skills to the level required to lead and work effectively with others

#### Required knowledge

Required knowledge includes:

- organisational structure of the motorsport event, including authority and communication lines
- extensive knowledge of rules and regulations pertaining to the motorsport event
- professional and ethical responsibilities of stewards
- potential risks associated with motorsport
- application of risk management principles
- protest, inquiry and appeal processes and procedures
- principles of administrative law and natural justice when applied to motorsport investigations, protests, inquiries and appeals
- conflict management techniques
- reporting requirements and procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- procedures for operation and maintenance of required equipment and technology
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS) and environmental regulations, relevant to motorsport events
- organisational policies and procedures, including ethical requirements, emergency response, reporting and recording procedures, and work organisation and planning processes, related to motorsport events

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- demonstrate extensive knowledge of rules and regulations applicable to the motorsport category
- undertake pre-event inspections and authorisation in a systematic manner
- apply rules and regulations correctly to facilitate safe and effective conduct of a motorsport event
- communicate effectively with other personnel involved in the event
- participate effectively in protests and hearings, make decisions and impose penalties
- complete a written final report to the controlling body.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to suitable motorsport events
  - all documentation, including rules and regulations, safety procedures and event procedures
  - all equipment, including communications and personal safety equipment.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of

**EVIDENCE GUIDE**

	<p>workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsport**

Motorsport may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international events

**Rules and regulations**

Motorsport rules and regulations may include:

- National Competition Rules (NCR)

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• National Rally Code (NRC)</li> <li>• event supplementary regulations</li> <li>• technical regulations</li> <li>• association and club rules, regulations and codes</li> <li>• Officials Code of Conduct</li> <li>• international sporting code</li> <li>• Federation Internationale de l'Automobile (FIA)</li> <li>• Federation Internationale Motocycliste (FIM)</li> </ul>
<b>Professional and ethical standards</b>	<p>Professional and ethical standards for officials may include:</p> <ul style="list-style-type: none"> <li>• dress, personal presentation, preparedness and personal conduct</li> <li>• respect for the rights and responsibilities of others</li> <li>• commitment and responsibility to safety</li> <li>• confidentiality, impartiality and no conflict of interest</li> <li>• contribution to the overall effectiveness of the team</li> <li>• self-improvement through feedback, performance appraisal and training</li> </ul>
<b>Pre-event inspection</b>	<p>Items to be checked before authorising an event to proceed may include:</p> <ul style="list-style-type: none"> <li>• applicable rules and regulations, including supplementary regulations</li> <li>• event program</li> <li>• instructions for participants</li> <li>• appointment of essential officials</li> <li>• number of officials and volunteers</li> <li>• adequacy and condition of facilities and equipment</li> <li>• safety arrangements, including emergency response</li> <li>• communication systems</li> <li>• eligibility of vehicles and participants</li> <li>• event documentation and information</li> <li>• suitability of signs and advertisements</li> </ul>
<b>Information and documents</b>	<p>Information and documents may include:</p>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>controlling body rules, category rules and supplementary regulations</li> <li>event policies and procedures relating to work areas, authorities and lines of communication</li> <li>task instructions, including briefings, worksheets, checklists and plans</li> <li>industry codes of practice</li> <li>instructions issued by authorised internal or external persons</li> <li>material safety data sheets (MSDS)</li> <li>diagrams or sketches</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>award and enterprise agreements</li> <li>industrial relations</li> <li>confidentiality and privacy</li> <li>WHS</li> <li>the environment</li> <li>equal opportunity</li> <li>anti-discrimination</li> <li>duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>personal protective equipment and clothing</li> <li>safety equipment</li> <li>first aid equipment</li> <li>hazard and risk control</li> <li>elimination of hazardous materials and substances</li> <li>manual handling, including shifting, lifting and carrying</li> <li>emergency procedures</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>waste management</li> <li>noise</li> <li>dust</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• habitat, flora and fauna protection</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li><li>• codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Officiating
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## AURMGA2001 Set up and dismantle temporary work location and equipment

### Modification History

Release	Comment
Release 1	Replaces AURM240172B Set up and dismantle temporary work location and equipment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to set up temporary work location and equipment according to team requirements.</p> <p>It requires the ability to set up and dismantle temporary shelter and equipment storage, layout equipment, erect team promotional signage and set up functional workspace.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake site preparation and assembly and disassembly of temporary work locations in a motorsports environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare site	1.1. Interpret site information and requirements and confirm with site supervisor/circuit manager 1.2. Consider security and confidentiality issues and select risk management measures 1.3. Identify potential hazards and select risk management measures 1.4. Consider path of movement (obstacles, hazards and safety conditions) in positioning of equipment and tooling and take measures to eliminate hazards 1.5. Observe workplace health and safety (WHS) requirements, including equipment and system isolation requirements, and observe personal protection needs throughout the work
2. Assemble temporary work location	2.1. Unload equipment and tooling from transporters in accordance with team requirements 2.2. Assemble, erect and secure temporary work shelter and associated fittings in accordance with shelter manufacturer/component supplier procedure, team requirements and event supplementary regulations
3. Position equipment and tooling	3.1. Assemble equipment according to manufacturer/component supplier specifications 3.2. Position equipment according to team requirements, WHS requirements, controlling body rules, category rules and supplementary regulations 3.3. Identify, fit and install required protective equipment in accordance with manufacturer/component supplier and team guidelines 3.4. Monitor effectiveness of area layout during use and make recommendations for changes to appropriate persons 3.5. Identify problems with the work area and report to appropriate persons
4. Dismantle temporary work location	4.1. Clean, dismantle and pack temporary work shelter in preparation for transportation in accordance with team procedures 4.2. Account for tooling and equipment and maintain and pack in preparation for transportation in accordance with team procedures 4.3. Load shelter, equipment and tooling on transporters in accordance with team procedures

ELEMENT	PERFORMANCE CRITERIA
	4.4. Clean and inspect work area for serviceable condition in accordance with local requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to lifting and measuring devices and equipment connections
- communication skills to the level required to communicate ideas and information to enable checking of temporary work location and stowage of tooling of equipment in transporters, and to report work outcomes and problems
- literacy skills to the level required to collect, organise and understand information related to set-up and dismantling of temporary work location structure and layout, set-up of equipment, event, and category rules and supplementary regulations
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements relating to team operating area layout and equipment positioning
- problem-solving skills to the level required to use checking and inspection techniques to ensure safety of temporary work location structure and equipment positioning
- team skills to the level required to work with others and in a team by using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities to set up and dismantle site under limited supervision

#### Required knowledge

Required knowledge includes:

- event category rules, supplementary regulations, site and team requirements
- principles and functionality requirements of the layout of temporary work location
- workflow of pit lane/service area operations
- tooling and equipment required for specific events
- temporary shelter assembly and erection methods and techniques
- positioning of equipment for ease of access, security, logical workflow and ergonomic use
- set-up of equipment for safe and effective operation (e.g. correct boom height, securing of gas bottles, and secure service area moorings/pontoon)
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to loading and unloading equipment and shelter erection

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly set up and dismantle a temporary work location on a minimum of three (3) occasions, in at least two (2) different locations, and complete the following:
  - identify/confirm temporary location layout
  - establish the area layout
  - confirm effectiveness of area layout
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• an area to set-up a temporary work location</li> <li>• standard operating procedures</li> <li>• tools and equipment.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Ancillary set-up</b>	<p>Ancillary set-up may include:</p> <ul style="list-style-type: none"> <li>• erection of temporary wheel alignment and</li> </ul>

<b>RANGE STATEMENT</b>	
	weighing equipment <ul style="list-style-type: none"> <li>• installation of pit wall resources:               <ul style="list-style-type: none"> <li>• data acquisition beacon</li> <li>• pit board</li> <li>• stop watches</li> <li>• links</li> <li>• cabling</li> </ul> </li> </ul>
<b>Temporary work locations</b>	Temporary work locations may include <ul style="list-style-type: none"> <li>• specified pit areas (e.g. pit lane and pit bay)</li> <li>• service areas for rally and boating events</li> </ul>
<b>Setting up a temporary work location</b>	Setting up a temporary work location may include: <ul style="list-style-type: none"> <li>• installation of floor matting</li> <li>• set-up of tables and benches</li> <li>• positioning of tooling and equipment, including category specific resources, such as:               <ul style="list-style-type: none"> <li>• nitrogen bottles</li> <li>• tyre warmers</li> <li>• power leads</li> <li>• jacking systems</li> </ul> </li> <li>• installation of computing and data acquisition equipment</li> <li>• installation of firefighting and environmental protection equipment, including:               <ul style="list-style-type: none"> <li>• drip/spill trays</li> <li>• oil absorbent material</li> <li>• cleaning agents</li> <li>• disposal containers</li> </ul> </li> <li>• erection of promotional signage and security barriers</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>substances</p> <ul style="list-style-type: none"><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li><li>• team insurance requirements</li><li>• material safety management systems</li><li>• controlling body requirements</li><li>• manufacturer/component supplier specifications</li><li>• local safe operating procedures</li></ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"><li>• award and enterprise agreements</li><li>• industrial relations</li><li>• Australian standards</li><li>• confidentiality and privacy</li><li>• WHS</li><li>• the environment</li><li>• equal opportunity</li><li>• anti-discrimination</li><li>• duty of care</li><li>• health regulations</li></ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"><li>• lifting devices</li><li>• basic construction tooling:<ul style="list-style-type: none"><li>• hammers</li><li>• pliers</li><li>• zip ties</li><li>• tape</li><li>• step-ladder</li><li>• spanners</li><li>• screwdrivers</li></ul></li></ul>
<b>Material</b>	<p>Materials may include:</p> <ul style="list-style-type: none"><li>• light gauge tubing</li><li>• synthetic panelling</li><li>• wire</li></ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• rope and cord</li></ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"><li>• controlling body rules, category rules and supplementary regulations</li><li>• team procedures and standards related to:<ul style="list-style-type: none"><li>• setting up a temporary work location</li><li>• reporting and communication</li><li>• use of tooling and equipment</li><li>• emergency service contacts and team persons emergency contacts</li><li>• team emergency and event procedures for accidents or injury</li></ul></li><li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li><li>• manufacturer/component supplier specifications and application procedures for test equipment and materials</li><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li><li>• building codes</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	
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## AURMGA4002 Manage personal presentation and development

### Modification History

Release	Comment
Release 1	Replaces AURM441538B Manage personal presentation and development  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to manage personal presentation, learning and career options, develop personal conflict management skills and health and fitness plan.</p> <p>It requires the ability to take responsibility for own personal presentation, identify personal strengths and support career path with appropriate learning, manage physical health and fitness and communicate effectively within a team.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who manage their own presentation and learning and career options, develop personal conflict management skills and a health and fitness plan in a motorsport environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish personal presentation standards	1.1. Clarify team, role and personal presentation expectations 1.2. Maintain personal presentation standards of team 1.3. Develop and implement strategies to achieve personal presentation standards
2. Determine potential career paths in motorsport	2.1. Identify, develop and implement personal strengths and opportunities for improvement 2.2. Identify personal attitudes needed to succeed in motorsport 2.3. Review and link personal goals and team goals 2.4. Consider career options within the team and outside the team 2.5. Identify potential career paths to achieve personal goals 2.6. Document achievements and experience in the form of a comprehensive résumé
3. Manage personal learning	3.1. Research different learning styles and identify own learning style preference 3.2. Develop strategies to maximise the effectiveness of personal learning 3.3. Research and apply the effects of preferred learning styles in the team environment 3.4. Review and modify strategies, as necessary
4. Develop personal health and fitness plan	4.1. Manage personal nutritional requirements for functioning in a motorsport environment 4.2. Manage stress and fatigue using appropriate strategies 4.3. Manage personal physical fitness requirements in relation to team role requirements 4.4. Develop strategies to manage the impact of legal and illegal drugs on personal competence and performance within a motorsport environment 4.5. Review and modify own health and fitness plan
5. Establish personal conflict resolution strategies	5.1. Identify potential causes of conflict in relation to preferred learning style within the team environment 5.2. Implement personal strategies for dealing with conflict 5.3. Research communication techniques 5.4. Implement strategies for improving communication

ELEMENT	PERFORMANCE CRITERIA
	with team members

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology to assist research and store information
- communication skills to the level required to communicate ideas and information to enable development of conflict management strategies and effective ways for working with other team members, and to report work outcomes and issues
- literacy skills to the level required to collect, organise and understand information related to team roles and relationships, learning styles, health and nutrition, communication and conflict resolution
- numeracy skills to the level required to use mathematical ideas and techniques to estimate the financial and time wastage impact of inefficient working strategies
- problem-solving skills to the level required to use scenario planning techniques to assist in determining career choices and knowledge of group dynamics to anticipate potential conflict situations and plan management strategies
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise information flow and communication
- planning skills to the level required to plan and organise activities, including research into learning styles, career options, conflict management strategies, and nutrition and physical fitness requirements

#### Required knowledge

Required knowledge includes:

- team roles, responsibilities and relationships
- motorsport sectors and categories
- goal setting methods, such as specific, measurable, achievable, realistic, timely (SMART)
- personal presentation standards, including hair, clothes, personal hygiene, posture, body language and speech
- résumé and curriculum vitae development

**REQUIRED SKILLS AND KNOWLEDGE**

- learning styles and the impact of appropriate persons with different learning styles working together in normal and pressure environments
- positive and negative effects of personal attitudes in a motorsport environment
- communication principles and techniques
- group dynamics in high-pressure environments
- conflict management strategies and techniques
- human nutritional requirements, food groups and their effect on the human body, including specific nutritional requirements for functioning in a motorsport environment
- the impact of legal and illegal drugs on the human body and their implications in motorsport
- principles of physical fitness and fitness requirement for functioning effectively in a motorsport environment

**Evidence Guide****EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team standards and expectations
- demonstrate personal presentation and conduct to team expectations for a minimum duration of one (1) day on at least three (3) occasions in motorsport environments, including:
  - workshop
  - competition event
  - promotional activity

(each environment must be covered at least once)

- develop a personal résumé, including detailed statements of:
  - qualifications and training
  - experience in the motorsport industry

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• relevant experience beyond the motorsport industry</li> <li>• testimony from employers, colleagues or training bodies</li> <li>• develop a personal health and fitness plan, including detailed statements of: <ul style="list-style-type: none"> <li>• a minimum of three (3) strategies for managing nutrition needs. Each strategy must demonstrate a knowledge of recommended nutritional intake</li> <li>• a minimum of three (3) strategies for increasing personal fitness. Strategies must address at least one (1) of flexibility, cardiovascular fitness, muscular strength and endurance</li> <li>• a minimum of three (3) stress management strategies</li> </ul> </li> <li>• demonstrate a minimum of three (3) conflict resolution strategies, in situations covering: <ul style="list-style-type: none"> <li>• tight timeframes or extended working hours</li> <li>• differing expectations</li> <li>• different working styles</li> <li>• appropriate persons external to the team</li> </ul> </li> <li>• work with and around other team members</li> <li>• modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.</li> <li>• Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</li> <li>• Assessment is to comply with relevant regulatory requirements, including specified Australian standards.</li> <li>• Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• access to job/role descriptions</li> <li>• documentation of team procedures and processes.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of</li> </ul>

**EVIDENCE GUIDE**

	<p>Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Career planning**

Career planning may include:

- researching personal expectations and potential career paths within and beyond the motorsport team, including national and international opportunities

**Managing personal learning**

Managing personal learning may include:

- researching different learning styles
- determining personal preferences
- devising strategies to increase the effectiveness of personal learning

**RANGE STATEMENT****Health in a motorsport environment**

Health in a motorsport environment may include understanding:

- the principles of fitness
- nutrition
- the impact of legal and illegal drugs on body functioning
- performance and stress management

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements
- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures

**Information and procedures**

Information and procedures may include:

- controlling body rules, category rules and supplementary regulations
- team policies and procedures relating to representing the team in public
- team procedures relating to reporting and communication

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	
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## AURMKA4001 Manage motorsport data

### Modification History

Release	Comment
Release 1	Replaces AURM441438B Manage motorsport data acquisition Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to configure a data acquisition system and to analyse and present motorsport data.</p> <p>It requires the ability to analyse data requirements, configure an electronic system and retrieve, analyse and present data in various forms, including charts, graphs, tables, comparisons and reports.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the identification of data acquisition needs of a motorsport team and configure a system so as to retrieve, analyse and present the data. Data may be related to weather, circuit, driver/rider characteristics, systems capability and vehicle design specifications.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
AURETR2012	Test and repair basic electrical circuits
AURMTA3009	Collect and log motorsport data
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm data acquisition requirements	<ul style="list-style-type: none"><li>1.1. Use controlling body rules, category rules, supplementary regulations and team requirements to specify task requirements, including configuration, equipment, quality and quantities</li><li>1.2. Access and interpret benchmark specifications for a correctly functioning electronic data acquisition system</li><li>1.3. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work</li></ul>
2. Configure electronic data acquisition systems	<ul style="list-style-type: none"><li>2.1. Select and prepare tools and material to support the data acquisition process</li><li>2.2. Calculate and enter component rates/ratios and parameters for input sensors within system math channels</li><li>2.3. Enter sample rates most suited to particular data logging channel</li><li>2.4. Conduct system check in accordance with regulatory, manufacturer/component supplier and team requirements</li></ul>
3. Retrieve data	<ul style="list-style-type: none"><li>3.1. Use team instructions and procedures to identify data retrieval requirements for specific purposes</li><li>3.2. Follow data retrieval process in accordance with specifications and directions</li><li>3.3. Verify data retrieved, where appropriate, by using reliable alternate or optional processes</li><li>3.4. Identify variables and potential for inaccurate results</li></ul>
4. Analyse data	<ul style="list-style-type: none"><li>4.1. Compare all sources of collected data</li><li>4.2. Analyse data using mathematical processes</li><li>4.3. Analyse trends and patterns in data including non-conforming results outside of the predicted outcomes</li><li>4.4. Investigate possible reasons for trends and patterns</li><li>4.5. Identify potential performance enhancement solutions</li><li>4.6. Report problems with the required data and/or the operation of the equipment to appropriate persons</li></ul>
5. Present data	<ul style="list-style-type: none"><li>5.1. Identify end users of statistical data and their</li></ul>

ELEMENT	PERFORMANCE CRITERIA
	<p>preferred format</p> <p>5.2.Represent data to meet the needs of the end user</p> <p>5.3.Document appropriate recommendations</p> <p>5.4.Present recommendations with supporting data</p>
6. Clean up work area and maintain equipment	<p>6.1.Clean, maintain and prepare equipment ready for future use and store in accordance with manufacturer/component supplier specifications and team requirements</p> <p>6.2.Remove waste material according to team procedures</p> <p>6.3.Diagnose faults in acquisition systems and components</p> <p>6.4.Document unserviceable equipment and faults and take appropriate action in accordance with team procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to configuring data acquisition systems, retrieving and presenting collected data
- communication skills to the level required to communicate ideas and information to enable clarification of work requirements, coordination of work with team members, and reporting of work outcomes and issues
- literacy skills to the level required to collect, organise and understand information related to configuring data acquisition systems, retrieving and presenting collected data, and the analysis of data system requirements for end users
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during the configuration of data acquisition systems and presentation of data
- problem-solving skills to the level required to use problem-solving techniques to anticipate changing information requirements and influences
- team skills to the level required to work with others to foster the team, recognise dependencies, and use cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the coordination of data acquisition equipment, systems and materials to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- data acquisition channel requirements, including types, characteristics, uses and limitations of signal devices/sensors
- methods for determining/calculating component rates and ratios
- configuration, inspection and system checks of data acquisition systems
- operation of data acquisition systems and the inputting of variables
- data retrieval processes and techniques
- data analysis principles, techniques and methodology, including associated mathematical formulae
- types of statistical representations of motorsport data, users of the data and their preferred format of data display
- types of motorsport data sources include vehicle, weather, circuit and driver/rider
- mathematical processes to arrange data
- data comparison methods

**REQUIRED SKILLS AND KNOWLEDGE**

- data presentation methods
- data acquisition system fault diagnosis
- data security and confidentiality procedures
- procedures for reporting equipment faults and data defects
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to managing data acquisition

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply safety requirements, including the isolation of equipment and the use of personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly configure data acquisition, acquire, analyse and present motorsport data on a minimum of two (2) occasions. At least one (1) of these must be an appropriate event, and cover each of the following:
  - vehicle data
  - weather data
  - circuit data
  - driver/rider characteristics
- retrieve data within relevant team quality and timeliness standards
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to

**EVIDENCE GUIDE**

	<p>accommodate ethnicity, age, gender, demographics and disability.</p> <ul style="list-style-type: none"> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• team requirements</li> <li>• access to data acquisition system and associated material and equipment</li> <li>• information on work specifications</li> <li>• organisational procedures</li> <li>• safety procedures, regulations and quality standards.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Tools and equipment

Tools and equipment may include:

- data acquisition tools
- multimeters
- computers
- hand-held calculators
- mathematical tables
- graphing and charting equipment

#### WHS requirements

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements
- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures

#### Legislative requirements

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to:               <ul style="list-style-type: none"> <li>• managing motorsport data acquisition</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> </ul> </li> <li>• team emergency and event procedures for accidents or injury</li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Sources of collected data</b></li> </ul>	<ul style="list-style-type: none"> <li>• vehicle</li> <li>• weather</li> <li>• circuit</li> <li>• driver/rider</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Information Technology
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## AURMLA2001 Comply with motorsport rules and regulations when officiating

### Modification History

Release	Comment
Release 1	Replaces AURMO2003A Comply with motorsport rules and regulations when officiating Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to apply relevant rules and regulations when acting as an official or volunteer in a motorsport event. It requires an understanding of the effects of non-compliance on the image of motorsport and on participants. It also includes the application of some basic strategies to prevent and/or deal with minor disputes regarding decisions made by the official.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake officiating, support or voluntary roles in motorsport events, including practice sessions.</p> <p>The unit supports volunteers and officials to understand and comply with the rules of motorsport and related protocols.</p> <p>Work is performed under routine supervision and competency requires some judgement and decision making.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess event conditions	<ul style="list-style-type: none"><li>1.1.Familiarise self with rules and regulations governing the event or competition</li><li>1.2.Assess the participant status and criteria for the event or competition</li><li>1.3.Ensure the environment, facilities and equipment within own area of responsibility are in accordance with requirements for the event or competition</li><li>1.4.Assess and confirm that the safety and other risk management issues are within acceptable levels prior to the commencement of the event or competition, within own area of responsibility</li><li>1.5.Report any concerns promptly to senior official</li></ul>
2. Observe the conduct of an event	<ul style="list-style-type: none"><li>2.1.Maintain vigilant and alert observation of the event or competition at all times</li><li>2.2.Undertake observation in accordance with relevant rules, regulations and guidelines for the event or competition</li><li>2.3.Respond to identified problems without delay and take appropriate safety and risk management actions</li></ul>
3. Interpret and apply rules and regulations	<ul style="list-style-type: none"><li>3.1.Follow the rules and regulations of motorsport in the performance of duties</li><li>3.2.Practice ethical behaviour in the application of rules and regulations</li><li>3.3.Discuss the consequences of perceived corruption or conflict of interest on the image of motorsport</li><li>3.4.Determine the rule or regulation which is appropriate for the given situation</li><li>3.5.Interpret the rule or regulation for the given situation to ensure consistency with competition outcomes</li><li>3.6.Make decisions based on fairness</li><li>3.7.Comply with directions and requests from stewards and senior officials</li></ul>
4. Communicate decisions	<ul style="list-style-type: none"><li>4.1.Communicate decisions in accordance with the rules, regulations and guidelines, and the level of competition</li><li>4.2.Manage the reactions of participants to decisions in accordance with the rules, regulations and guidelines</li><li>4.3.Report incidents or non-compliant activities to senior official and/or stewards</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to operate information and communications technology to access and apply information on rules and regulations
- communication skills to the level required to communicate and discuss rules and regulations, deal with minor disputes, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to read and interpret rules and regulations and to accurately record and report details of incidents and non-compliance
- problem-solving skills to the level required to determine the rule or regulation which applies to a given situation and make appropriate decisions
- team skills to the level required to ensure completion of tasks in a safe and timely manner

#### Required knowledge

Required knowledge includes:

- relevant motorsport codes, guidelines and rules and regulations
- ethical and unethical conduct in officiating
- appeals and inquiries processes and procedures
- communication procedures, including reporting lines, within the motorsport environment
- basic conflict management techniques
- range of potential workplace hazards, risks and emergency situations
- basic principles of risk management
- procedures for reporting incidents and documentation which needs to be completed
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS) and environmental regulations, relevant to officiating or volunteering in a motorsport event
- organisational policies and procedures, including safety requirements, hazard identification, risk assessment and emergency response procedures, related to officiating or volunteering in a motorsport event

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- demonstrate sufficient knowledge of relevant rules, regulations and guidelines and ability to apply them to facilitate the outcome of an activity
- assess that conditions are in compliance with event rules and regulations
- observe the conduct of an activity and identify information on which to base decisions
- practice fairness and ethical behaviour in the application of rules and regulations
- communicate decisions and manage outcomes in accordance with relevant rules, regulations and guidelines.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to relevant rules and regulations, codes and guidelines
  - access to suitable motorsport events
  - applicable personal protection and safety equipment and resources.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of

**EVIDENCE GUIDE**

	<p>workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsports**

Motorsports may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international events

**Rules and regulations**

Rules and regulations impacting on officials may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• current edition of the relevant National Competition Rules (NCR)</li> <li>• supplementary regulations for the event or competition</li> <li>• Federation Internationale de l'Automobile (FIA) and Federation Internationale Motocycliste (FIM) policies and procedures</li> <li>• organisations' rules, policies and procedures regarding competent and ethical officiating, dress requirements and protocols, health and safety, and other values underpinning the activity</li> <li>• professional association regulations and codes of conduct</li> <li>• Australian Sports Commission Officials Code of Conduct policy</li> <li>• relevant national, state/territory or local government regulations and guidelines</li> </ul>
<b>Fairness</b>	<p>Fairness relates to:</p> <ul style="list-style-type: none"> <li>• consistent interpretation and application of rules and regulations</li> <li>• elimination of biases towards one team or competitor</li> <li>• one team or competitor not gaining an unfair advantage over another</li> </ul>
<b>Communication skills</b>	<p>Communication skills to manage the reactions of participants to decisions may include:</p> <ul style="list-style-type: none"> <li>• addressing people politely</li> <li>• clarifying the relevant rule or regulation</li> <li>• presenting information in logical order</li> <li>• refraining from swearing, arguing or fighting</li> <li>• remaining patient</li> <li>• refraining from interrupting</li> <li>• speaking clearly</li> <li>• using language that is not patronising but at a suitable level</li> <li>• using body language and voice in an assertive but not aggressive manner</li> <li>• using non-discriminatory language</li> <li>• using effective listening and speaking skills</li> <li>• verifying what has been said or done and why</li> </ul>

<b>RANGE STATEMENT</b>	
	it has been said or done
<b>Risk</b>	<p>Risk relates to</p> <ul style="list-style-type: none"> <li>the likelihood of a hazard causing injury or harm</li> </ul>
<b>Risk control</b>	<p>Procedures for controlling risks may include:</p> <ul style="list-style-type: none"> <li>application of the hierarchy of control</li> <li>basic risk assessment</li> <li>complying with safe operating procedures for equipment</li> <li>correct selection, use, storage and maintenance procedures for personal protective equipment</li> <li>evacuation</li> <li>maintaining vigilance, awareness and observation in the work environment</li> <li>reporting of identified risks or hazards</li> <li>requests for backup support or instructions</li> <li>use of fire safety equipment</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>hardcopy and electronic media</li> <li>verbal, written and graphical information</li> <li>safe work procedures related to motorsport officiating and volunteering</li> <li>regulatory/legislative requirements pertaining to motorsport officiating and volunteering</li> <li>NCR and event supplementary regulations</li> <li>FIA and FIM policies and procedures</li> <li>motorsport organisation manuals, codes of conduct, policies and procedures</li> <li>controlling body rules, category rules and supplementary regulations</li> <li>event policies and procedures relating to work areas, authorities and lines of communication</li> <li>task instructions, including briefings, worksheets, checklists and plans</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational</p>

<b>RANGE STATEMENT</b>	
	<p>safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• habitat, flora and fauna protection</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> <li>• industry codes of practice</li> <li>• safe work procedures</li> <li>• communication, reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Regulatory or Legal
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## AURMLA3002 Monitor compliance with motorsport rules and regulations

### Modification History

Release	Comment
Release 1	Replaces AURMO3002A Monitor compliance with motorsport rules and regulations Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to ensure relevant rules and regulations are applied accurately and consistently by officials and volunteers in a motorsport event. It also includes the application of conflict resolution strategies to prevent and/or deal with minor disputes regarding decisions made by an official.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake a supervisory role to promote and monitor the accurate interpretation and application of rules and regulations by officials, support staff or volunteers in motorsport events, including practice sessions.</p> <p>Correct and consistent application of rules and regulations is integral to the integrity and image of motorsport and to provide fair and equitable outcomes for participants.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Provide information on rules and regulations	<ul style="list-style-type: none"><li>1.1. Accurately and clearly explain to personnel relevant rules and regulations, including organisation-specific policies and procedures</li><li>1.2. Make all current and updated rules and regulations readily accessible to staff in a timely and regular manner according to organisational procedures</li><li>1.3. Regularly provide information and clearly explain to the work group information about the application and interpretation of rules and regulations</li><li>1.4. Provide opportunities for staff members to contribute their views on the application and interpretation of rules and regulations, including possible ramification of poor decisions and conflicts of interest</li></ul>
2. Monitor application of rules and regulations	<ul style="list-style-type: none"><li>2.1. Monitor ongoing compliance with rules and regulations and ethical behaviour in the application of rules and regulations</li><li>2.2. Take prompt and appropriate action to address non-compliance or misinterpretations of rules and regulations</li><li>2.3. Monitor the effectiveness of rules and regulations in maintaining the integrity of the event and ensuring fair outcomes for participants</li><li>2.4. Provide timely feedback on non-compliance to designated person according to organisation procedures</li></ul>
3. Adjudicate on decisions	<ul style="list-style-type: none"><li>3.1. Adjudicate on decisions, where required, in accordance with the rules and regulations</li><li>3.2. Manage the reactions of participants to decisions in accordance with the rules and regulations</li><li>3.3. Use effective communication skills to manage and resolve conflict situations</li><li>3.4. Report incidents or non-compliant activities to senior official and/or stewards</li></ul>
4. Identify training needs	<ul style="list-style-type: none"><li>4.1. Provide advice on training needs of individuals and workgroup based on monitoring of team performance</li><li>4.2. Provide coaching and mentoring assistance to team members and/or facilitate arrangements for fulfilling training needs in consultation with appropriate management and according to organisation policies</li></ul>

ELEMENT	PERFORMANCE CRITERIA
	and procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to operate information and communications technology to access and disseminate information on rules and regulations
- communication skills to the level required to communicate and discuss rules and regulations, promote compliance, deal with conflict and disputes, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to read and interpret rules and regulations, and to accurately record and report details of incidents and non-compliance
- problem-solving skills to the level required to determine the rule or regulation which applies to a given situation, to assess situations and make appropriate decisions
- team skills to the level required to coordinate team adherence to, and correct and consistent application of, rules and regulations

#### Required knowledge

Required knowledge includes:

- applicable motorsport codes, guidelines, and rules and regulations
- ethical and unethical conduct in officiating
- communication procedures, including reporting lines, within the motorsport environment
- types and causes of conflict that typically occurs and resolution techniques
- organisation policies and procedures on conflicts and complaints, including any reporting requirements
- procedures for reporting incidents and documentation which needs to be completed
- appeals and inquiries processes and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS) and environmental regulations, relevant to officiating or volunteering in a motorsport event
- organisational policies and procedures, including safety requirements, hazard

**REQUIRED SKILLS AND KNOWLEDGE**

identification, risk assessment and emergency response procedures, related to officiating or volunteering in a motorsport event

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- demonstrate broad knowledge of relevant rules, regulations and guidelines, and the ability to apply them to facilitate the outcome of an activity
- provide clear and accurate explanations of rules and regulations to other personnel
- monitor the application of rules and regulations and identify non-compliance
- practice fairness and ethical behaviour in the application of rules and regulations
- adjudicate decisions and manage conflict in accordance with relevant rules, regulations and guidelines
- complete accurate reports on incidents and disputes.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to relevant rules and regulations, codes and guidelines
  - access to suitable motorsport events
  - applicable personal protection and safety equipment and resources.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsports**

Motorsports may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international events

**Rules and regulations**

Rules and regulations impacting on officials may

<b>RANGE STATEMENT</b>	
	<p>include:</p> <ul style="list-style-type: none"> <li>• current edition of the relevant National Competition Rules (NCR)</li> <li>• supplementary regulations for the event or competition</li> <li>• organisations' rules, policies and procedures regarding competent and ethical officiating, dress requirements and protocols, health and safety, and other values underpinning the activity</li> <li>• professional association regulations and codes of conduct</li> <li>• Australian Sports Commission Officials Code of Conduct policy</li> <li>• relevant national, state/territory or local government regulations and guidelines</li> <li>• Federation Internationale de l'Automobile (FIA) and Federation Internationale Motocycliste (FIM) policies and procedures</li> </ul>
<b>Implications</b>	<p>Implications of non-compliance with rules and regulations may include:</p> <ul style="list-style-type: none"> <li>• health and safety</li> <li>• duty of care</li> <li>• employment</li> <li>• privacy</li> <li>• natural justice</li> <li>• tribunals/judiciaries/hearings</li> <li>• contracts</li> <li>• sponsorship</li> </ul>
<b>Fairness</b>	<p>Fairness relates to:</p> <ul style="list-style-type: none"> <li>• consistent interpretation and application of rules and regulations</li> <li>• elimination of biases towards one team or competitor</li> <li>• one team or competitor not gaining an unfair advantage over another</li> </ul>
<b>Conflict resolution techniques</b>	<p>Conflict resolution techniques include:</p> <ul style="list-style-type: none"> <li>• problem solving</li> <li>• negotiation</li> <li>• use of appropriate communication skills</li> </ul>

**RANGE STATEMENT****Communication skills**

Communication skills to manage the reactions of participants to decisions may include:

- addressing people politely
- clarifying the relevant rule or regulation
- presenting information in logical order
- refraining from swearing, arguing or fighting
- remaining patient
- refraining from interrupting
- speaking clearly
- using language that is not patronising but at a suitable level
- using body language and voice in an assertive but not aggressive manner
- using non-discriminatory language
- using effective listening and speaking skills
- verifying what has been said or done and why it has been said or done

**Information/documents**

Sources of information/documents may include:

- hardcopy and electronic media
- verbal, written and graphical information
- safe work procedures related to motorsport officiating and volunteering
- regulatory/legislative requirements pertaining to motorsport officiating and volunteering
- NCR and event supplementary regulations
- motorsport organisation manuals, codes of conduct, policies and procedures
- controlling body rules, category rules and supplementary regulations
- event policies and procedures relating to work areas, authorities and lines of communication
- task instructions, including briefings, worksheets, checklists and plans

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"><li>• hazard and risk control</li><li>• elimination of hazardous materials and substances</li><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li></ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"><li>• award and enterprise agreements</li><li>• industrial relations</li><li>• confidentiality and privacy</li><li>• WHS</li><li>• the environment</li><li>• equal opportunity</li><li>• anti-discrimination</li><li>• relevant industry codes of practice</li><li>• duty of care</li></ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include but are not limited to:</p> <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• habitat, flora and fauna protection</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li><li>• industry codes of practice</li><li>• safe work procedures</li><li>• communication, reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Regulatory or Legal
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## AURMLA3003 Inspect motorsport vehicles and equipment for compliance

### Modification History

Release	Comment
Release 1	Replaces AURMO3004A Inspect motorsport vehicles and equipment for compliance Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to inspect competition vehicles and safety equipment for compliance with applicable motorsport rules and regulations. It also includes inspecting the drivers' documents, clothing and equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who act as scrutineers in motorsport events, examining vehicles to ensure they meet eligibility and safety criteria for the particular event category, including practice sessions.</p> <p>This can include testing of engines and mechanical components, inspection of vehicle frame and construction and ensuring all guards and safety equipment are correctly fitted.</p> <p>The work requires sufficient mechanical knowledge and skills to use testing and measuring equipment to check mechanical and safety specifications and to recognise non-compliance.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for scrutineering	1.1. Be conversant with rules and regulations governing vehicle and driver eligibility and safety criteria for the event 1.2. Ensure the scrutineering bay has all necessary tools and equipment to perform tests and measurements 1.3. Assess and confirm that safety and other risk management issues are within acceptable levels, within own area of responsibility 1.4. Ensure all necessary documentation is on hand 1.5. Report any concerns promptly to Chief Scrutineer or Clerk of Course 1.6. Attend pre-event briefing session
2. Confirm driver eligibility	2.1. Examine each driver's documents to confirm status and eligibility for the event 2.2. Examine each driver's clothing and equipment for compliance with safety specifications
3. Confirm vehicle compliance	3.1. Examine each vehicle to ensure it complies with mechanical and safety specifications for the event 3.2. Complete an inspection report for each vehicle 3.3. Document any discrepancies in log book 3.4. Impound defective parts, components or whole vehicles, where necessary
4. Monitor vehicle compliance	4.1. Observe vehicles in the assembly and starting areas to identify any mechanical or safety problems 4.2. Oversee work done on vehicle during pit stops to ensure it is in accordance with relevant rules and regulations 4.3. Examine vehicle damage after an incident to ascertain roadworthiness for re-entry into the event 4.4. Prepare damage reports on vehicles and note logbook, as required
5. Communicate decisions and complete reports	5.1. Advise Chief Scrutineer or Clerk of Course of any breach of compliance 5.2. Manage the reactions of participants to decisions in accordance with rules, regulations and Officials Code of Conduct 5.3. Ensure inspection reports are completed accurately and signed 5.4. Complete a scrutineer's report at the end of the

ELEMENT	PERFORMANCE CRITERIA
	event

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to operate testing and measuring instruments, tools and equipment
- communication skills to the level required to communicate and discuss rules and regulations, deal with minor disputes, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to read and interpret rules and regulations, mechanical specifications and safety criteria, and to accurately record and report details of incidents and non-compliance
- problem-solving skills to the level required to determine the rule or regulation which applies to a given situation, assess level of damage or non-compliance and make appropriate decisions
- team skills to the level required to ensure completion of tasks in a safe and timely manner

#### Required knowledge

Required knowledge includes:

- relevant motorsport codes, guidelines, and rules and regulations
- mechanical knowledge to a level appropriate to the situation
- safe operation of testing and measuring instruments and equipment
- methods for examining vehicles and equipment for mechanical and safety compliance
- procedures for reporting non-compliance and incidents and documentation which needs to be completed
- communication procedures, including reporting lines, within the motorsport environment
- range of potential workplace hazards, risks and emergency situations
- basic principles of risk management
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS) and environmental

**REQUIRED SKILLS AND KNOWLEDGE**

- regulations, relevant to officiating or volunteering in a motorsport event
- organisational policies and procedures, including safety requirements, hazard identification, risk assessment and emergency response procedures, related to officiating or volunteering in a motorsport event

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- demonstrate sufficient knowledge of relevant rules and regulations and the ability to apply them to determine eligibility of vehicles and participants
- act as a scrutineer in at least two (2) motorsport events
- use relevant tools, instruments and equipment
- conduct all activities in accordance with safety and risk management procedures
- practice fairness and ethical behaviour in the application of rules and regulations
- communicate decisions and manage outcomes in accordance with relevant rules, regulations and guidelines
- complete documents and reports accurately.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to relevant rules and regulations, codes and guidelines
  - access to suitable motorsport events
  - access to facilities, tools and equipment to check vehicles
  - applicable personal protection and safety equipment and resources.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsports**

Motorsports may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international

<b>RANGE STATEMENT</b>	
	events
<b>Rules and regulations</b>	<p>Rules and regulations may include:</p> <ul style="list-style-type: none"> <li>• current edition of the relevant National Competition Rules (NCR)</li> <li>• supplementary regulations for the event or competition</li> <li>• organisations' rules, policies and procedures regarding competent and ethical officiating, dress requirements and protocols, health and safety, and other values underpinning the activity</li> <li>• professional association regulations and codes of conduct</li> <li>• Australian Sports Commission Officials Code of Conduct policy</li> <li>• relevant national, state/territory or local government regulations and guidelines</li> <li>• Federation Internationale de l'Automobile (FIA) and Federation Internationale Motocycliste (FIM) policies and procedures</li> </ul>
<b>Eligibility criteria</b>	<p>Eligibility criteria will vary according to different motorsport categories and may include regulations or specifications for:</p> <ul style="list-style-type: none"> <li>• participant or competitor registration or licence</li> <li>• participant or competitor safety apparel and equipment</li> <li>• fitness of the person to participate in the event</li> <li>• vehicle markings, including advertising</li> <li>• vehicle construction</li> <li>• engine capacity</li> <li>• mechanical components and systems (e.g. brakes, exhaust, steering and driveline)</li> <li>• safety devices (e.g. fire protection, safety cage, roll bars and safety harness)</li> <li>• windscreens and window nets</li> <li>• vehicle weight</li> <li>• noise emission</li> <li>• wheels and tyres</li> <li>• fuels, lubricants and consumables</li> </ul>

**RANGE STATEMENT****Tools and equipment**

Tools and equipment used to check vehicle compliance may include:

- computerised diagnostic equipment
- multimeters
- dynamometers
- measuring equipment (e.g. micrometers, depth gauges, vernier calipers, dial gauges and pressure gauges)
- exhaust gas analysers

**Communication skills**

Communication skills to manage the reactions of participants to decisions may include:

- addressing people politely
- clarifying the relevant rule or regulation
- presenting information in logical order
- refraining from swearing, arguing or fighting
- remaining patient
- refraining from interrupting
- speaking clearly
- using language that is not patronising but at a suitable level
- using body language and voice in an assertive but not aggressive manner
- using non-discriminatory language
- using effective listening and speaking skills
- verifying what has been said or done and why it has been said or done

**Information/documents**

Sources of information/documents may include:

- hardcopy and electronic media
- verbal, written and graphical information
- safe work procedures related to motorsport officiating and volunteering
- regulatory/legislative requirements pertaining to motorsport officiating and volunteering
- NCR and event supplementary regulations
- motorsport organisation manuals, codes of conduct, policies and procedures
- controlling body rules, category rules and supplementary regulations
- event policies and procedures relating to work areas, authorities and lines of

<b>RANGE STATEMENT</b>	
	<p>communication</p> <ul style="list-style-type: none"> <li>task instructions, including briefings, worksheets, checklists and plans</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>personal protective equipment and clothing</li> <li>safety equipment</li> <li>first aid equipment</li> <li>hazard and risk control</li> <li>elimination of hazardous materials and substances</li> <li>manual handling, including shifting, lifting and carrying</li> <li>emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>award and enterprise agreements</li> <li>industrial relations</li> <li>confidentiality and privacy</li> <li>WHS</li> <li>the environment</li> <li>equal opportunity</li> <li>anti-discrimination</li> <li>relevant industry codes of practice</li> <li>duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management</li> <li>noise</li> <li>habitat, flora and fauna protection</li> <li>clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>WHS, sustainability, environment, equal opportunity and anti-discrimination policies</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>and procedures</li><li>• industry codes of practice</li><li>• safe work procedures</li><li>• communication, reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Regulatory or Legal
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## AURMMA2001 Operate in a motorsport environment

### Modification History

Release	Comment
Release 1	Replaces AURM240080B Operate in a motorsport environment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to operate in a motorsport environment.</p> <p>It requires the ability to determine a career path, meet motorsport team expectations and employment expectations, manage daily work activities and contribute to the effective working of the team.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who establish individual goals, understand and meet team expectations, and manage daily work activities in a motorsport environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine potential career path and develop individual goals	1.1.Observe workplace health and safety (WHS), including regulatory requirements and personal protection needs, throughout the work 1.2.Identify structure of the motorsport sector, including the roles and functions of industry/association bodies, identified 1.3.Assess personal skills to identify strengths and weaknesses 1.4.Research motorsport team expectations 1.5.Set goals to achieve personal expectations 1.6.Research potential career paths in motorsport and match with personal goals 1.7.Identify training needs and incorporate into career planning
2. Meet motorsport team employment requirements	2.1.Identify team organisational structure and team member roles and responsibilities 2.2.Comply with obligations to employers and others, including confidentiality requirements 2.3.Identify and comply with team lines of communication and authority 2.4.Comply with legislation, regulations, codes of practice and team expectations, policies and procedures 2.5.Identify and demonstrate principles and methods of gaining and maintaining health and fitness levels to job role
3. Manage daily work activities	3.1.Comply with own work role and responsibilities 3.2.Use required lines of communication with supervisors, peers and external persons 3.3.Identify, prioritise and complete individual tasks within designated timeframes and team standards and according to work schedule 3.4.See assistance from appropriate persons when difficulties arise in achieving allocated tasks 3.5.Make changes to workload or work priorities where unforeseen circumstances or developments occur 3.6.Monitor own work and adjust according to feedback obtained from supervisors 3.7.Maintain a well organised and safe personal workspace in accordance with team and workplace

ELEMENT	PERFORMANCE CRITERIA
	standards 3.8. Identify potentially discriminating or hazardous practices and policies and report to team persons
4. Contribute to a productive team environment	4.1. Share information and knowledge with team members to ensure designated work goals are met 4.2. Identify and prioritise personal work objectives in accordance with team requirements 4.3. Receive, encourage, acknowledge and act upon constructive feedback from other team persons 4.4. Detect variations in the quality of components or work practices from team standards and report to team persons in accordance with team procedures 4.5. Actively seek assistance from, or provide to, other persons when difficulties arise 4.6. Use communication techniques to gather and understand instructions 4.7. Identify signs of potential interpersonal conflict and constructively act upon or refer to a supervisor

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to measurement, including tooling, equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information, to articulate personal goals, career choices and information to team members, and to report work outcomes and issues
- literacy skills to the level required to collect, organise and understand information related to the motorsport sector, including team roles and responsibilities, WHS, motorsport categories and potential career paths
- numeracy skills to the level required to use mathematical ideas and techniques, to interpret work instructions and complete tasks
- problem-solving skills to the level required to use problem-solving techniques to develop solutions to unpredicted situations, to clarify work instructions, where necessary, and to resolve conflict
- team skills to the level required to work with others and in a team using cooperative approaches to optimise work practices and contribute to a productive team environment
- planning skills to the level required to plan and organise activities, including equipment and resources to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- motorsport categories
- roles of Australian and international motorsport regulatory bodies
- structure of the motorsport sector, roles within teams and their relationship with one another
- authority and communication lines within teams
- motorsport work ethic and team expectations, including personal attitudes needed
- motorsport terminology used to assist work performance
- performance vehicle components, tooling and equipment used by motorsport teams
- workshop layout and organisation
- principles and methods of gaining and maintaining health and fitness, including nutritional requirements
- goal setting methods and techniques
- communication principles and techniques
- conflict resolution principles and techniques

**REQUIRED SKILLS AND KNOWLEDGE**

- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to operating in a motorsport environment

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- produce a career plan covering:
  - personal goals and expectations
  - opportunities
  - timeframe and personal development needs
- correctly perform a range of daily work activities for a minimum duration of one (1) day on at least three (3) occasions in motorsport environments covering:
  - routine maintenance
  - pre-event preparation
  - a competition event
  - post-event maintenance and repairs
- work with and around other team members
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory

**EVIDENCE GUIDE**

	<p>requirements, including specified Australian standards.</p> <ul style="list-style-type: none"> <li>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>motorsport team policies and procedures related to job descriptions, authority and communication lines</li> <li>tooling and equipment.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

**RANGE STATEMENT**

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsport teams**

Motorsport teams may include national and international teams in any category, including:

- car/truck
- motorcycle
- go-cart
- boat
- off-road
- drag racing sectors (e.g. V8 Supercar, Formula 1, Formula Ford, Superbike, Sprintcars, Jet-sprint boat and off-shore power boat categories)

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements
- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Team expectations</b>	<p>Team expectations may include standards of:</p> <ul style="list-style-type: none"> <li>• dress, personal presentation, preparedness and personal conduct, including respect for the rights and responsibilities of others</li> <li>• quality and timeliness of work and the role of excellence and innovation</li> <li>• knowledge of tooling and equipment and specific work area functions</li> <li>• commitment, responsibility and preparedness for work, including working flexible hours to meet deadlines</li> <li>• confidentiality and ethical work practices</li> <li>• contribution to the overall effectiveness of the team</li> </ul>
<b>Australian and international motorsport regulatory bodies</b>	<p>Australian and international motorsport regulatory bodies include:</p> <ul style="list-style-type: none"> <li>• Fédération Internationale De l'Automobile (FIA)</li> <li>• Confederation of Australian Motorsport (CAMS)</li> <li>• Australian National Drag Racing Association (ANDRA)</li> <li>• Australian Rally Commission (ARCom)</li> <li>• Motorcycling Australia</li> </ul>
<b>Tools and equipment</b>	<p>Tools and equipment may include:</p> <ul style="list-style-type: none"> <li>• pneumatic impact wrench (rattle gun)</li> <li>• boom</li> <li>• gas bottle</li> <li>• fire extinguisher</li> <li>• car stands</li> <li>• spanner types</li> <li>• wheel nut types and hub components</li> <li>• suspension components</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• damper components</li><li>• lifting devices, including jacks</li><li>• front and rear bars/spoilers</li><li>• anti-roll bars</li></ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"><li>• controlling body rules, category rules and supplementary regulations</li><li>• team procedures and standards related to:<ul style="list-style-type: none"><li>• work areas, authorities and lines of communication</li><li>• competition vehicle assembly</li><li>• reporting and communication</li><li>• use of tooling and equipment</li><li>• emergency service contacts and team persons emergency contacts</li><li>• team emergency and event procedures for accidents or injury</li></ul></li><li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li><li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	Management, Leadership and Supervision
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## AURMMA3007 Follow motorsport event and team safety requirements

### Modification History

Release	Comment
Release 1	Replaces AURM340175A Follow motorsport event and team safety requirements Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to safely operate in a motorsport team.</p> <p>It requires the ability to understand motorsport event and team safety rules and regulations, and to identify risks in the team operating area.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Individuals would typically be using and handling fuels and hazardous chemicals, servicing and undertaking emergency repairs on competition vehicles and working with and around other team members in a motorsport environment.</p> <p>This unit applies to individuals working under direct supervision and with no responsibilities for other people.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess and report safety risks	1.1. Follow workplace procedures accurately to assess and control risks in own work area 1.2. Categorise risks according to severity and impact on team operations 1.3. Identify and report inadequacies in existing risk control measures not addressed by team procedures, controlling body rules, category rules or supplementary regulations
2. Follow event and team safe work practices and procedures	2.1. Clarify and follow controlling body rules, category rules and supplementary regulations related to safety 2.2. Clarify personal and motorsport team safety procedures and requirements 2.3. Recognise and report hazards in the work area to appropriate people according to workplace procedures 2.4. Wear required personal protection equipment, as required 2.5. Safely handle and store dangerous goods and hazardous substances according to team and legislative requirements 2.6. Identify and follow workplace procedures for dealing with incidents, fire and other emergencies

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to categorise risks, use pre-checking and inspection techniques to anticipate potentially hazardous situations and work procedures to avoid accidents, injury and damage to competition vehicle, tooling and equipment, and to use workplace technology related to safe handling
- communication skills to the level required to communicate ideas and information to enable identified risks to be managed, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities

**REQUIRED SKILLS AND KNOWLEDGE**

- literacy skills to the level required to collect, organise and understand information related to controlling body rules, category rules and supplementary regulations, workplace health and safety (WHS) requirements and team procedures related to safety
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements relating to event and team safety procedures
- problem-solving skills to the level required to anticipate changing information requirements or influences
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise safety and workflow
- planning skills to the level required to plan and organise activities, including work tasks and flow, to avoid potentially hazardous situations to self and others

**Required knowledge**

Required knowledge includes:

- team safety policies and procedures, including:
  - emergency procedures relating to accident and injuries
  - dangerous goods and hazardous substances handling and storage requirements
  - safety and personal protective equipment and correct applications
  - preventative measures, such as maintenance of a clean and tidy work area, resource storage, and clean and functioning tooling and equipment
- identification and classification of dangerous goods and hazardous substances relevant to motorsport
- component manufacturer/supplier specifications and local safe operating procedures
- controlling body requirements, category rules and supplementary regulations
- competition vehicle movement procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, reporting and recording procedures, relevant to a motorsport event and team safety

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- interpret correctly safety rules and regulations
- assess the risk of the team operating area
- apply safe working practices on two (2) occasions. One (1) of these must be at and during an event. Each of the following must be covered:
  - the use, handling and storage of fuels and hazardous chemicals
  - personnel movement and positioning during an event
  - competition vehicle control
  - servicing and emergency repairs on competition vehicles
  - working with and around other team members
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory

**EVIDENCE GUIDE**

	<p>requirements, including specified Australian standards.</p> <ul style="list-style-type: none"> <li>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>access to an appropriate motorsport event</li> <li>material work instructions and deadlines</li> <li>controlling body rules</li> <li>category rules</li> <li>supplementary regulations</li> <li>safety and hazardous substances legislation and team procedures.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement**

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Assessing risk in the team operating area**

Assessing risk in the team operating area may include considering:

- movement of personnel, including team members, guests or members of the public, in the team operating area
- positioning of appropriate persons prior to and during competition vehicle stops
- use of dangerous goods or hazardous substances
- emergency repair procedures
- team member responsibilities

**Motorsport team procedures to achieve a safe working environment**

Motorsport workplace procedures to achieve a safe working environment may include:

- an awareness of competition vehicles
- an awareness of other people when working with tooling and equipment in the team operating area
- the handling of dangerous goods and substances
- reporting all breakdowns in relation to machinery and equipment
- follow manual handling according to worksite procedures
- following team communication procedures
- wearing appropriate personal protection equipment

**Motorsport team procedures for dealing with incidents, fire and other emergencies**

Motorsport workplace procedures for dealing with incidents, fire and other emergencies may include:

- following worksite illness and accident policies and procedures
- locating safety alarms
- contacting qualified persons in the event of accident or sickness
- following worksite evacuation procedures

**RANGE STATEMENT****Team working area**

The team working area may include:

- pit lane
- pit wall
- pit bay
- service area
- pontoon/jetty
- workshop and storage area
- competition vehicle transporters

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- material safety management systems
- controlling body requirements
- manufacturer specifications
- local safe operating procedures
- personal protective equipment and clothing including closed-in shoes, long trousers, fire suit, gloves/helmet, and eye and ear protection
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• fire extinguishers</li> <li>• first aid kits</li> <li>• fire blanket</li> <li>• jack lockouts</li> <li>• vehicle stop signalling equipment</li> <li>• communication equipment</li> <li>• vehicle support equipment (e.g. stands)</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures and standards relating to: <ul style="list-style-type: none"> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> <li>• team and event safety requirements</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

<b>Co-requisite units</b>		

**Competency field**

<b>Competency field</b>	Management, Leadership and Supervision
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## AURMMA3008 Coordinate operations of a motorsport team

### Modification History

Release	Comment
Release 1	Replaces AURM340710B Coordinate operations of a motorsport team  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to coordinate operations of a small motorsport team at a club non-professional level.</p> <p>It requires the ability to use skills to coordinate a small motorsport team at club/non-paid level, including team persons, finances, logistics, time management and competition strategy development.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who coordinate the activities of a small team of a minimum of three (3) persons in an informal, but competitive environment in a motorsport club/non-paid environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop team role and responsibility descriptions	<ul style="list-style-type: none"><li>1.1.Specify team goals in consultation with team members and develop review schedule</li><li>1.2.Specify team roles and responsibilities and develop review schedule</li><li>1.3.Check roles and responsibilities for compliance with controlling body rules, category rules and supplementary regulations</li><li>1.4.Modify roles and responsibilities</li><li>1.5.Document and implement team roles and responsibilities</li></ul>
2. Manage team finances	<ul style="list-style-type: none"><li>2.1.Estimate team financial requirements in consultation with team members</li><li>2.2.Prepare team budget</li><li>2.3.Devise financial documentation procedures</li><li>2.4.Document financial transactions</li><li>2.5.Prepare financial reports and present to team members for review</li></ul>
3. Develop team competition strategy	<ul style="list-style-type: none"><li>3.1.Seek input from team members</li><li>3.2.Review past performance</li><li>3.3.Devise team strategies for attaining competitive advantage, including technical, promotional or psychological advantage</li><li>3.4.Devise contingency strategies</li></ul>
4. Coordinate team participation at events	<ul style="list-style-type: none"><li>4.1.Develop team event schedule and distribute to team members</li><li>4.2.Arrange team travel, and accommodation, where required, requirements</li><li>4.3.Allocate responsibilities and tasks and brief team members</li><li>4.4.Supervise competition vehicle preparation</li><li>4.5.Arrange competition vehicle transport requirements</li><li>4.6.Supervise team operations at events and make regular checks with team members</li></ul>
5. Coordinate post-event activities	<ul style="list-style-type: none"><li>5.1.Arrange post-event team debriefing sessions</li><li>5.2.Coordinate competition vehicle post-event check and repairs</li><li>5.3.Coordinate component and material replenishment</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to planning and logistics, including computer software assembly problems
- communication skills to the level required to communicate ideas and information to enable effective team operation
- literacy skills to the level required to collect, organise and understand information related to category rules and supplementary regulations, team requirements, bookkeeping requirements and financial reporting, to ensure compliance with rules and regulations
- numeracy skills to the level required to use mathematical ideas and techniques to correctly determine requirements and keep financial records
- problem-solving skills to the level required to anticipate changing information requirements or influences
- team skills to the level required to use knowledge of group dynamics, scenario planning, logistics and financial planning to keep team operating
- planning skills to the level required to plan and organise activities, including team practice, attendance at events and test sessions

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations
- principles of group dynamics
- basic bookkeeping systems
- scenario and logistics planning
- time management strategies
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, reporting and recording procedures, relevant to team coordination

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply controlling body and category rules and supplementary regulations
- apply safety requirements including the use of personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- develop and implement team operational requirements for a minimum of two (2) motorsport events, one (1) of which may be a simulated event. Operational areas are to include, as a minimum:
  - team member roles and responsibilities
  - team financial management
  - event participation
  - competition strategy
  - post-event activities
- conduct work to quality and timeliness standards
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to

<b>EVIDENCE GUIDE</b>	
	<p>work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <ul style="list-style-type: none"> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>controlling body rules, category rules and supplementary regulations and legislation</li> <li>process equipment, material, work instructions and deadlines.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and</p>

**RANGE STATEMENT**

regional contexts) may also be included.

**Team schedules**

Team schedules may include:

- competition events and practice
- promotional and test days

**Promotional activities**

Promotional activities may include:

- liaison with media
- promotional partners/sponsors
- dissemination of team performance

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures
- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• financial recording systems (e.g. computer software and financial transactions book)</li> <li>• project management software</li> <li>• databases</li> <li>• electronic diaries</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures and standards relating to: <ul style="list-style-type: none"> <li>• coordinating team operations</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> <li>• safety requirements</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> <li>• financial institution requirements</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Management, Leadership and Supervision
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## AURMMA4002 Manage the preparation of a competition vehicle

### Modification History

Release	Comment
Release 1	Replaces AURM441638B Manage the preparation of a competition vehicle  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to develop competition vehicle preparation specifications, checklists and schedules, and to supervise the preparation and post-preparation checks to the competition vehicle.</p> <p>It requires the ability to research for information, assess personnel capabilities, schedule constraints, and supervise others to prepare a competition vehicle and to check the post-preparation vehicle and work area.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who research, plan for and supervise the preparation and post-preparation of a competition vehicle in the motorsport environment.</p> <p>A competition vehicle can be described as any automobile which competes in any event of a competitive nature.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research information to develop preparation specifications and checklists	1.1. Use controlling body rules, category rules, supplementary regulations and team requirements to specify task requirements, including configuration, equipment, quality and quantities 1.2. Examine regulations and specifications/tolerances for competitive advantage 1.3. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work 1.4. Write job specifications containing steps and stages and communicate to appropriate persons 1.5. Produce preparation checklists 1.6. Develop procedures for minimising waste material
2. Develop preparation schedule	2.1. Assess equipment and appropriate person capabilities to meet job specifications 2.2. Consider constraints to schedule, including timing and location of upcoming event, and equipment/component and appropriate personnel availability 2.3. Document optimum sequence for preparation 2.4. Document critical path and factors affecting that path 2.5. Produce and communicate preparation schedule to appropriate persons
3. Supervise preparation	3.1. Monitor implementation of preparation schedule 3.2. Monitor work area cleanliness and layout for job requirements 3.3. Install and supervise inspections for quality and readiness of components for installation 3.4. Supervise installation sequence and techniques 3.5. Conduct checks during and after installation to ensure accurate and complete fitting 3.6. Evaluate and resolve problems with the work area or the operation of equipment 3.7. Evaluate and resolve problems with proposals for modifications or adaptation of equipment and components
4. Supervise post-preparation	4.1. Inspect vehicle and identify and address problems 4.2. Supervise post-preparation checks and vehicle

ELEMENT	PERFORMANCE CRITERIA
checks	start-up 4.3. Supervise vehicle baseline set-up 4.4. Supervise clean-up of work area 4.5. Inspect work area and vehicle completion and complete documentation

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the management of assembly and preparation, including tooling, measuring devices, equipment, calculators and computers
- communication skills to the level required to communicate ideas and information to enable clarification of requirements, coordination of work with technical supervisors and other team members, and to report work outcomes and resolution of problems
- literacy skills to the level required to research, collect, organise and understand information related to competition vehicle assembly and preparation processes, including technical, regulatory, environmental and safety requirements
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during the management of the preparation of a competition vehicle
- problem-solving skills to the level required to create and apply systematic problem-solving techniques to anticipate problems, avoid reworking and avoid wastage
- team skills to the level required to work with others to foster the team by recognising dependencies and using cooperative approaches to optimise communication, workflow and productivity
- planning skills to the level required to plan and organise activities, including the development of specifications, checklists and schedules, and the coordination of appropriate personnel, equipment, systems and material to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- team requirements/job specifications, supplementary regulations and component supplier specifications including the examination of information for competitive advantage
- resources availability, including competencies of individuals in the team/group
- specification, checklist and schedule preparation
- work area and component layout
- inspection methods
- assembly and preparation processes applicable to competition vehicles
- problem-solving techniques
- WHS requirements

**REQUIRED SKILLS AND KNOWLEDGE**

- record keeping techniques
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to supervising the preparation of a competition vehicle

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly manage the preparation of a competition vehicle on at least one (1) occasion, covering each of the following:
  - develop task specifications, preparation checklists and schedules
  - supervise competition vehicle preparation and post-preparation checks
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• access to competition vehicles</li> <li>• assembly tooling</li> <li>• computing, operational and inventory support systems</li> <li>• material, equipment and information on work specifications</li> <li>• team requirements</li> <li>• organisational procedures</li> <li>• safety procedures and regulations</li> <li>• quality standards.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

**RANGE STATEMENT**

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Competitive advantage**

Competitive advantage may include:

- technical advantage
- psychological advantage
- promotional advantage

**Preparation checklists**

Preparation checklists may include:

- assembly checklists
- worksheets
- pre-race/event checklists
- pit lane checklists
- post-race/event checklists

**Tooling and equipment**

Tooling and equipment may include:

- hand tooling
- measuring devices
- computers

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements
- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory

**RANGE STATEMENT**

	<p>legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to: <ul style="list-style-type: none"> <li>• the preparation of competition vehicles</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team personnel emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> <li>• motorsport/performance enhancement industry publications and electronic sources of information related to the preparation of</li> </ul>

**RANGE STATEMENT**

	competition vehicles
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Management , Leadership and Supervision
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## AURMMA5003 Manage motorsport operations

### Modification History

Release	Comment
Release 1	Replaces AURM542338A Manage motorsport operations Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge to manage motorsport operations. It includes motorsport team leadership, decision making, ensuring team compliance with motorsport regulatory requirements, and managing logistics and resourcing.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work involves managing team operations and may include, but is not limited to, workshop management, specific event preparation management, innovation and component management.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in consultation with team members, decision making and planning</p> <p>Competence may be demonstrated in workplaces involved in motorsport, associated with motorsport teams or in a simulated environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Lead team members in undertaking tasks	1.1. Models of leadership are researched and appropriate models applied 1.2. Personal leadership preferences, strengths and weaknesses are identified and strategies developed to enhance leadership 1.3. Team goals are developed in consultation with team members and documented 1.4. Workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs, are observed throughout the work 1.5. Tasks are delegated, monitored and feedback on performance of tasks given 1.6. Team member performance reporting and review mechanisms are developed and implemented
2. Apply decision-making strategies	2.1. Information is gathered from a variety of sources and team members are consulted 2.2. All information is considered in determining options 2.3. The most appropriate option, given the team circumstances and goals, is chosen 2.4. Decisions are communicated to team members 2.5. Decisions are reviewed and modifications made where required
3. Supervise team compliance with regulatory body requirements	3.1. Regulatory body requirements are interpreted 3.2. Instructions for team members are developed and implemented 3.3. Team members are briefed 3.4. Liaison with regulatory body officials is undertaken
4. Plan resources for team operations	4.1. Team resource and equipment requirements are researched and documented 4.2. Resource needs are prioritised and matched to team budget and priorities are confirmed (or modified) after consultation with team members 4.3. Resource and equipment suppliers are identified and confirmed 4.4. Procurement plan with prioritised purchasing is devised and resources are procured accordingly
5. Plan logistics for team operations	5.1. Operational work plans including role responsibilities, timeframes and milestones are developed

ELEMENT	PERFORMANCE CRITERIA
	<p>5.2. Operations are checked to ensure optimum use of human and physical resources</p> <p>5.3. Operational plans are implemented and team members briefed as to roles and responsibilities</p> <p>5.4. Operational plans are documented and amended in accordance with team procedures and expectations</p>
6. Evaluate operational processes	<p>6.1. Operational progress is closely monitored against required quality of work and adherence to both budget and time schedule and reported to appropriate persons in accordance with team requirements</p> <p>6.2. Opportunities for preventative or corrective changes are identified using outcomes of monitoring activity and feedback from team members</p> <p>6.3. Preventative or corrective action is recommended and implemented</p> <p>6.4. Changes are communicated to appropriate persons in a logical and easily understood manner</p> <p>6.5. Changes are monitored to confirm improvement to team efficiency</p> <p>6.6. Records are maintained of key information pertaining to operational processes in accordance with team requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to team resource and logistic requirements, legislative and motorsport regulatory requirements from a variety of sources, using a range of research techniques
- communicate ideas and information to enable input from team members and understanding by team members of plans developed
- plan and organise activities including consultation with team members to determine team resource and logistic requirements and development, implementation and review of operational plans
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise information flow and productivity
- use mathematical ideas and techniques to correctly interpret budgets and estimate material requirements required for team resource and logistic requirements
- use information gathering, analysis and evaluative techniques to determine team resource and logistic requirements and develop strategies to address these
- use workplace technology related to computer software programs for gathering and recording information, including internet search, spreadsheets and databases

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations
- leadership models
- goal development (e.g. SMART - specific, measurable, achievable, realistic and timely)
- delegation strategies
- information gathering strategies (including internet and library searching and networking)
- analytical tools (e.g. critical path, cause and effect, pros/cons, force-field, Pareto and strength, weakness, opportunity and threat (SWOT) analyses and decision trees)
- decision making and models and techniques
- operational plan development
- logistics and procurement management techniques
- process engineering techniques and systems
- materials handling techniques and options
- equipment and machines to be used to achieve business outcome

**REQUIRED SKILLS AND KNOWLEDGE**

- business processes used in workplace
- resource availability, including competencies of individuals in the team

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply safety requirements including the use of personal protective equipment and materials handling equipment
- implement and supervise task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- complete the development of a significant operational procedure incorporating legislative safety requirements and covering:
  - a full analysis of the topic area
  - a step-by-step operational procedure
  - supporting documents to the procedure
- implement a process for an operational area as identified in the unit scope covering:
  - information dissemination
  - monitoring of operations
- complete a review and update of a process for an operational area as identified in the unit scope, covering:
  - system and sub-area/sub-system description
  - evaluation of the effectiveness of the process in achieving desired outcomes
  - legal, regulatory or intellectual property law requirements
  - documentation of modifications to improve the process
- complete work within team budgetary, quality and timeliness standards
- work effectively with others

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.</li> <li>Access to team budgets and inventories as identified in the Range Statement and team procedures.</li> <li>This unit may be undertaken under the guidance of a mentor in the workplace (e.g. team manager), where tasks are undertaken, but ultimate responsibility rests with the mentor.</li> <li>Assessment of this competence may include project related tasks and require portfolios or other forms of indirect evidence of process.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</li> <li>Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Operational resources</b>	<p>Operational resources include:</p> <ul style="list-style-type: none"> <li>persons</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• equipment and machinery</li> <li>• material and consumables</li> <li>• infrastructure</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements include:</p> <ul style="list-style-type: none"> <li>• state/territory and federal legislation</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer specifications and local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	<p>Work is carried out in accordance with legislative obligations (including environmental requirements), health regulations, manual handling procedures and team insurance requirements</p>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• a computer and project management database and logistics management software</li> </ul>
<b>Procurement planning</b>	<p>Procurement planning includes:</p> <ul style="list-style-type: none"> <li>• normal quantity supply (minimum and maximum holding) and matching storage facilities and materials handling equipment</li> </ul>
<b>Procurement</b>	<p>Procurement includes:</p> <ul style="list-style-type: none"> <li>• dissemination of material safety data sheets (MSDS) and other supplier safety information to appropriate persons</li> <li>• identification of relevant engineering controls or personal protection equipment and additional resources required for safe workplace handling and storage</li> <li>• these are documented and managed according to team procedures and legislative requirements</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures relating to applying specific operational areas</li> <li>• task instructions including worksheets,</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>checklists, plans, drawings and designs</li><li>• team procedures relating to reporting and communication</li><li>• team procedures relating to the use of tooling and equipment</li><li>• manufacturer/component supplier specifications, material safety data sheets and application procedures for equipment and material</li><li>• Australian Design Rules (where applicable)</li><li>• team budgets and inventories</li></ul>

## Unit Sector(s)

Unit sector	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Management, Leadership and Supervision
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## AURMMA5004 Manage motorsport team development

### Modification History

Release	Comment
Release 1	Replaces AURM542438A Manage motorsport team development Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to manage motorsport team development. It includes fostering teamwork ethic and morale, conflict management and identifying health requirements of team members.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involves consulting and working with team members to develop a shared understanding of roles and responsibilities, and team goals.</p> <p>Competence may be demonstrated in motorsport team workplaces, a simulated environment, or workplaces of enterprises supporting and working closely with motorsport teams.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop and implement team roles and responsibilities	1.1. Team roles and responsibilities in the workshop and event environment are determined and documented 1.2. Role descriptions are written in conjunction with team members 1.3. Authority hierarchies are identified and related to team roles and joint responsibilities are determined and documented 1.4. Workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs are observed throughout the work 1.5. Team members are briefed, roles implemented and modifications to role descriptions are made where necessary
2. Develop and foster motorsport teamwork ethic and image	2.1. Team image, philosophy and goals are defined through consultation with team members and promotional partners and documented 2.2. Information on team goals, image and attitudes is disseminated to team members 2.3. Personal attitudes needed to succeed in motorsport are identified 2.4. Strategies to support team members to reflect desired team image are developed 2.5. Team standards of behaviour, commitment and presentation are defined and expectations communicated to team members 2.6. Team members are briefed on how their decisions and actions must be consistent with team image, goals and personal goals philosophy 2.7. Maintenance of work ethic and image is encouraged, monitored and corrected where necessary
3. Develop and implement team member health and fitness policy	3.1. Basic nutritional requirements for persons operating in a motorsport environment are researched and documented 3.2. Event catering procedures suitable for the team are developed and documented 3.3. Strategies for coping with stress and fatigue are developed, communicated to team members and monitored 3.4. Physical fitness requirements of team members in relation to role requirements are developed,

ELEMENT	PERFORMANCE CRITERIA
	<p>communicated to team members and monitored</p> <p>3.5.The impact of drugs on personal competence within a motorsport environment is communicated to team members and monitored</p>
<p>4. Apply conflict resolution strategies</p>	<p>4.1.Opportunities for team members to discuss problems which directly or indirectly affect their work are regularly provided</p> <p>4.2.Potential and actual conflict situations are recognised and assistance is sought to resolve conflict with the appropriate persons involved in accordance with team procedures</p> <p>4.3.Options for resolution of conflict are identified allowing for constructive responses to be negotiated and enable established work relationships to continue</p> <p>4.4.The dispute or conflict is managed to optimise the likelihood of a favourable outcome for all parties and is in line with team goals</p> <p>4.5.The strategy selected for resolution is consistent with team practices/procedures</p> <p>4.6.Resolution and counselling skills to the situation are applied</p> <p>4.7.Outcomes meet individual, enterprise and legislative requirements</p> <p>4.8.Where records of the conflict and outcomes are kept, they are accurate, complete and comply with organisational requirements and are stored securely, only accessible to authorised persons</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to team roles and relationships, image and goals, nutrition and physical fitness of team members
- communicate ideas and information to enable confirmation of team roles and relationships, work ethic and team image expectations and standards and communicating with team members to resolve conflict
- plan and organise activities including professional development of team members regarding team goals and image, health and fitness requirements, stress management and conflict resolution strategies
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise information flow and communication
- use mathematical ideas and techniques to assist research, analysis and presentation of information
- use scenario planning techniques and knowledge of group behaviour and team dynamics to anticipate potential conflict situations and plan and implement resolution strategies
- use workplace technology to assist research, storage and presentation of information

#### Required knowledge

Required knowledge includes:

- team roles, responsibilities and interrelationship of roles
- leadership styles and decision-making models
- personal and work attitudes desired within the motorsport sector
- positive and negative potential of different personal attitudes in a motorsport environment
- positive and negative potential of differences between team and personal goals
- ways in which individual team members can promote or negatively impact on desired team image
- human nutritional requirements, the five food groups and their effect on the human body
- specific nutritional requirements for operating in a motorsport environment
- impact on the human body of using legal and illegal drugs and implications for a motorsport team
- principles of physical fitness and fitness requirements to operate in a motorsport environment

**REQUIRED SKILLS AND KNOWLEDGE**

- group dynamics in stressful environments
- communication principles and techniques
- causes of conflict
- conflict resolution models and strategies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply safety requirements including the use of personal protective equipment
- implement and supervise task instructions, operating procedures and processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- write role descriptions for all team members. These must include:
  - tasks (and sub-tasks)
  - responsibilities for outcomes
  - responsibilities for tooling, equipment and material
  - responsibilities for persons
  - responsibilities for systems
  - accountability
  - relationships with other team members
- develop at least three (3) conflict resolution strategies. They must contain:
  - rationale for choice in relation to the team environment
  - examples of scenarios where they could be implemented
  - a list of strengths and weaknesses
- complete work within team quality and timeliness standards
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

**EVIDENCE GUIDE****Context of, and specific resources for assessment**

- Assessment may occur on the job or in a workplace simulated facility with access to a motorsport team.
- Assessment of this competence may include project related tasks and require portfolios or other forms of indirect evidence.
- Access to job/role descriptions and advertising/promotional material as identified in the Range Statement and documentation of team procedures and processes.

**Method of assessment**

- Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.
- Assessment should be by direct observation of tasks and questioning on underpinning knowledge.
- Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Teams**

Teams may be small (4 or less persons), medium (5-15 persons) or large (more than 15 persons). The team context includes roles less central to the team operations. These include team owner, promotional partners and advertising/publicity persons

**Team roles**

Team roles may be highly differentiated or team members may perform multiple roles within the team

<b>RANGE STATEMENT</b>	
<b>WHS requirements</b>	WHS requirements include: <ul style="list-style-type: none"><li>• state/territory and federal legislation</li><li>• material safety management systems</li><li>• controlling body requirements</li><li>• manufacturer specifications and local safe operating procedures</li></ul>
<b>Legislative requirements</b>	Work is carried out in accordance with legislative obligations (including environmental requirements), health regulations, manual handling procedures and team insurance requirements
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"><li>• controlling body rules, category rules and supplementary regulations</li><li>• current team role/job descriptions</li><li>• task instructions including worksheets, checklists, plans, drawings and designs</li><li>• team procedures relating to reporting and communication</li><li>• team procedures relating to the use of tooling and equipment</li><li>• manufacturer/component supplier specifications and application procedures for tooling, equipment and material</li><li>• team advertising, promotional and/or promotional partner material</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Management, Leadership and Supervision
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## AURMMA5005 Manage team pit lane and service area operations

### Modification History

Release	Comment
Release 1	<p>Replaces AURM542738A Manage team pit lane/service area operations</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to plan, coordinate and oversee the operations of a motorsport team technical service crew. It includes pit lane/service area operations, emergency repairs and coordination of competition vehicle on-track support, persons and team communication.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in the development of the pit lane/service area management plan and contingency strategies, supervision of team members and inspection of the pit lane/service area.</p> <p>Competence must be demonstrated at and during a motorsport event.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
AURMTA3005	Perform pit lane and service area operations

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop pit lane/service area management plan	1.1. Workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs, are observed throughout the work 1.2. Controlling body rules, category rules and supplementary regulations requirements are checked and implemented 1.3. Required tooling and equipment are identified and checklists developed 1.4. Competition vehicle on-track support strategies are devised and documented 1.5. Team member responsibilities are determined and communicated 1.6. Task timings are determined, documented and communicated 1.7. Communication strategy is developed and team members briefed 1.8. Team work area and equipment security procedures are developed and team members briefed 1.9. Contingency plan is developed and documented
2. Inspect pit lane/service area operation readiness	2.1. Pit lane/service area layout is devised and implemented 2.2. Equipment and tool checks for operation, positioning and compliance with team specifications, controlling body rules, category rules, supplementary regulations and WHS requirements are supervised 2.3. Correct positioning of competition vehicle stop and service markings are checked
3. Supervise technical/service crew	3.1. Team members are briefed on their responsibilities, task timings, category rule and supplementary regulations requirements, WHS and environmental legislative requirements and security procedures prior to an event 3.2. Responsibilities and tasks are reviewed with team members at an event site 3.3. Communications equipment is allocated and communication strategy is reviewed with team members 3.4. Pit lane/service area operations are supervised and work is controlled as required

ELEMENT	PERFORMANCE CRITERIA
	<p>3.5.Safe working environment and practices are monitored and corrected as required</p> <p>3.6.Emergency repairs on competition vehicle are supervised and decision on re-entering event given</p> <p>3.7.Checks with team members are made regularly during an event</p>
4. Coordinate competition vehicle on-track support	<p>4.1.Technical advice is provided to driver/rider during competition and additional information is sought should clarification be required</p> <p>4.2.Competition related information and strategy is communicated to the driver/rider and team members during competition</p> <p>4.3.Records of race and team performance are maintained</p> <p>4.4.Liaison with event officials is conducted</p>
5. Supervise post-event operations	<p>5.1.Team members are supervised to ensure post-event impoundment procedures are followed as per controlling body rules, category rules or supplementary regulations</p> <p>5.2.Dismantling of pit lane/service area is supervised</p> <p>5.3.Clean-up of work area is supervised</p> <p>5.4.Disposal of waste material is supervised to ensure compliance with local requirements, environmental and WHS regulations</p> <p>5.5.Team/event documentation is completed</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to category rules and supplementary regulations, pit lane/service area operational tasks, legislative and team requirements to develop contingency strategies and a pit lane/service area management plan
- communicate ideas and information to enable team compliance with the pit lane/service area management plan and procedures
- plan and organise activities including pit lane/service area operations to avoid workflow interruptions, competition vehicle damage, injury or time wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly gauge task timing, material requirements, vehicle stop markings and equipment and tooling positioning
- use scenario planning, critical path analysis and logistics planning techniques to accommodate workflow, positioning, storage and works sequencing requirements
- use workplace technology related to planning and logistics, including computer hardware and software

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations
- controlling safe working practices in a pit lane/service area
- pit lane/service area operational tasks
- communication principles
- group dynamics principles
- effective supervision techniques
- scenario and logistics planning
- critical path analysis
- operational plan development

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply safety requirements including use of personal protective equipment and materials handling equipment
- implement and supervise task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- develop and implement a pit lane/service area management plan, covering:
  - minimisation of risk of injury to self or others
  - minimisation of the risk of damage to competition vehicle, tooling and equipment and wastage of material
  - minimisation of service and emergency repair times
  - addressing of potential problems
- supervise team members effectively
- modify activities to cater for variations in context and environment.

#### Context of, and specific resources for assessment

- Assessment must occur at and during a motorsport event.
- Access to category rules and supplementary regulations and legislation as identified in the Range Statement, team procedures and past performance data.

#### Method of assessment

- Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.
- Assessment should be by direct observation of tasks and questioning on underpinning knowledge.
- Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Pit lane/service area</b>	Pit lane/service area is defined as the area where the team technical support crew works on the competition vehicle during an event and includes the pit bay
<b>WHS requirements</b>	WHS requirements include: <ul style="list-style-type: none"> <li>state/territory and federal legislation</li> <li>material safety management systems</li> <li>hazardous substances and dangerous goods code</li> <li>local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	Work is carried out in accordance with environmental legislation, health regulations and team procedures
<b>Tooling and equipment</b>	Tooling and equipment may include, but is not limited to: <ul style="list-style-type: none"> <li>pneumatic wrenches</li> <li>boom and hoses</li> <li>gas cylinders</li> <li>jacks and jacking safety locks</li> <li>smash repair equipment</li> <li>spare components</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• cleaning equipment</li> <li>• fuel churns and refuelling equipment</li> <li>• fuel spill equipment</li> <li>• brake piston retraction tool</li> <li>• lifting devices and/or stands</li> <li>• boat launch equipment (e.g. winches, trailers, lifting slings and decanting equipment)</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices, including:</p> <ul style="list-style-type: none"> <li>• heat-proof gloves</li> <li>• enclosed shoes</li> <li>• long trousers</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• team procedures relating to pit lane/service area operation, team member roles, confidentiality and security</li> <li>• controlling body rules, category rules and supplementary regulations relating to pit lane/service area operations</li> <li>• environmental, hazardous chemical and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Management, Leadership and Supervision
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## AURMMA5006 Prepare and implement race strategies

### Modification History

Release	Comment
Release 1	Replaces AURM542849A Prepare and implement race strategies Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to develop race strategies, communicate strategy plan and contingencies to team members, implement race strategies and conduct post-event reviews.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involves consulting closely with team members and planning event strategies for competitive advantage (promotional, technical or psychological advantage).</p> <p>For the purpose of this unit of competency, a race is defined as each of the items in a program, such as a heat, final, test run, time trial or promotional ride, as distinct from a race meeting or event.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in incorporating team member opinions and suggestions, uncontrollable variables and other influencing factors.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop event strategy	<p>1.1. Workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs, are observed throughout the work</p> <p>1.2. Input is sought from team members and compared with available event data, including past performance, and points documented</p> <p>1.3. Team strategies are devised for attaining competitive advantage</p> <p>1.4. Team members are briefed on security of information and intellectual property procedures</p> <p>1.5. Contingency plans are developed and documented</p>
2. Communicate strategy plan and contingencies to team members	<p>2.1. Responsibilities within strategy, plan and contingencies are identified and confirmed with each team member</p> <p>2.2. Authority hierarchies and relationships are clearly explained</p> <p>2.3. Team feedback is sought, evaluated and incorporated</p>
3. Implement race strategies	<p>3.1. Team roles and responsibilities are reinforced with team members at an event, prior to event commencement</p> <p>3.2. Strategies are implemented and clearly communicated to team members during an event</p> <p>3.3. Contingency plans are communicated and team member roles and responsibilities outlined</p> <p>3.4. Strategy outcomes are monitored and amended as necessary during an event</p>
4. Conduct post-event review	<p>4.1. Event debrief is conducted with driver/rider and team members as soon as practicable following a race</p> <p>4.2. Data is analysed and points documented</p> <p>4.3. Technician reports are considered and points documented</p> <p>4.4. Team debrief is conducted and outcome including recommendations are documented</p> <p>4.5. Event strategies are reviewed with team members</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to previous event vehicle performance and potential performance, competitor performance, promotional partner exposure requirements and team pit lane/service area operation times
- communicate ideas and information to enable event strategies and contingencies to be understood by team members
- plan and organise activities including pit lane/service area and drive/ride sequencing to avoid backtracking, workflow interruptions or time wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete measurements and estimate time requirements pit lane/service area stops, driver changes where needed and competition vehicle servicing
- use problem-solving techniques to anticipate potential event scenarios and plan responses
- use workplace technology related to data analysis

#### Required knowledge

Required knowledge includes:

- vehicle and component system performance
- principles of psychological advantage
- problem-solving techniques, including but not limited to, brainstorming; scenario planning; critical path, force field, Pareto, pros/cons and SWOT analysis, and decision trees
- group dynamics and communication principles and techniques
- strategy planning

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**EVIDENCE GUIDE****Overview of assessment****Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply safety requirements including the use of personal protective equipment
- devise task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- develop and implement race strategies for a minimum of two (2) events (or simulated events). The following must be demonstrated during development:
  - consultation with team members
  - use of problem-solving techniques
  - consideration of driver/rider strengths and weaknesses
  - consideration of driver/rider characteristics
  - consideration of event variations
- complete all work data within team quality and timeliness standards
- work effectively with others
- modify activities to cater for variations in workplace context and environment
- apply team data security and confidentiality procedures and processes at all times.

**Context of, and specific resources for assessment**

- Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.
- Access to previous performance data, regulatory body and category rules and supplementary regulations.

**Method of assessment**

- Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.
- Assessment should be by direct observation of tasks and questioning on underpinning knowledge.
- Assessment should be conducted over time and may be in conjunction with assessment of other units of

**EVIDENCE GUIDE**

	<p>competency.</p> <ul style="list-style-type: none"> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Race strategies**

Race strategies include:

- consideration of own and competitor strengths and weaknesses
- driver/rider psychology
- determination of suitable pace, timing of pit stops/driver/rider changes, tyre choice and fuel load

**Contingency plans**

Contingency plans address potential risks and uncontrollable variables. These include, but are not limited to:

- weather changes
- variation in circuit conditions
- competition vehicle damage
- driver error
- possible competitor strategies

**WHS requirements**

WHS requirements include:

- state/territory and federal legislation
- material safety management systems
- controlling body requirements
- manufacturer specifications and local safe

RANGE STATEMENT	
	operating procedures
<b>Legislative requirements</b>	Work is carried out in accordance with legislative obligations (including environmental requirements), health regulations, manual handling procedures and team insurance requirements
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• data acquisition equipment and computer software and analysis programs</li></ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"><li>• controlling body rules, category rules and supplementary regulations</li><li>• team procedures relating to race strategies</li><li>• task instructions including worksheets, checklists, plans, drawings and designs</li><li>• team procedures relating to reporting and communication</li><li>• team procedures relating to the use of tooling and equipment</li><li>• manufacturer/component supplier specifications and application procedures for tooling and equipment</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Management, Leadership and Supervision
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## AURMSA2001 Follow motorsport safety and risk management procedures

### Modification History

Release	Comment
Release 1	Replaces AURMO2002A Follow motorsport safety and risk management procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to apply safety and risk management procedures in a motorsport environment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake officiating, support or voluntary roles in motorsport events, including practice sessions.</p> <p>Work is performed under routine supervision and competency requires some judgement and decision making.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Follow safety procedures	<ul style="list-style-type: none"><li>1.1. Identify safe work practices that apply in a motorsport event</li><li>1.2. Conduct all activities using safe operating practices in accordance with legislative and organisational requirements</li><li>1.3. Identify designated persons for reporting queries and concerns about safety in the workplace</li><li>1.4. Identify and follow organisational procedures and documentation for reporting safety information</li></ul>
2. Follow procedures for hazard identification and risk management	<ul style="list-style-type: none"><li>2.1. Identify existing and potential hazards in the workplace and report them to designated persons</li><li>2.2. Identify and implement organisational procedures and instructions for controlling risks</li><li>2.3. Record any incidents in accordance with organisational procedures</li></ul>
3. Deal with emergency situations	<ul style="list-style-type: none"><li>3.1. Identify emergency situations and promptly notify relevant persons</li><li>3.2. Follow emergency procedures correctly within limits of own authority</li><li>3.3. Identify personal limitations and promptly request backup support or further instructions</li><li>3.4. Report incidents and responses accurately in accordance with organisational procedures and legislative requirements</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to operate information and communications technology to access information
- communication skills to the level required to communicate and discuss workplace health and safety (WHS) concerns and information, and to relate to people from a

**REQUIRED SKILLS AND KNOWLEDGE**

range of social, cultural and ethnic backgrounds and of varying physical and mental abilities

- literacy skills to the level required to read and interpret safety information, signs, symbols and notices, and to accurately record and report details of hazards, risks and incidents
- research skills to the level required to source information on motorsport industry issues within a defined range
- problem-solving skills to the level required to identify common risks and hazards in a motorsport environment and to analyse options in an emergency situation
- team skills to the level required to ensure completion of tasks in a safe and timely manner

**Required knowledge**

Required knowledge includes:

- responsibilities of employers and employees under relevant WHS legislation
- organisational procedures for emergency and first aid response
- commonly used hazard signs and safety symbols
- common types and uses of personal protective equipment
- communication procedures, including reporting lines, within the motorsport environment
- range of potential workplace hazards, risks and emergency situations
- basic principles of risk management
- procedures for reporting risks and hazards and documentation which needs to be completed
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environmental regulations, relevant to officiating or volunteering in a motorsport event
- organisational policies and procedures, including safety requirements, hazard identification, risk assessment and emergency response procedures, related to officiating or volunteering in a motorsport event

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> <li>• follow organisational procedures relating to identifying, assessing and reporting risks and hazards within limits of own authority</li> <li>• follow organisational emergency procedures, including notification of relevant persons, request for backup assistance and accurate reporting of response</li> <li>• contribute to workplace safety arrangements to ensure a current knowledge and understanding of safety issues, practices and compliance requirements</li> <li>• accurately record and report safety risks and hazards using standard proformas or documentation.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.</li> <li>• Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</li> <li>• Assessment is to comply with relevant regulatory requirements, including specified Australian standards.</li> <li>• Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• access to legislative and organisational information on WHS policies and procedures</li> <li>• access to suitable motorsport events</li> <li>• NCR and event supplementary regulations</li> <li>• applicable personal protection and safety equipment and resources.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and</li> </ul>

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsports**

Motorsports may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international events

**WHS policies and procedures**

WHS policies and procedures may relate to:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• application of first aid</li> <li>• emergency and evacuation response</li> <li>• equipment maintenance and use</li> <li>• hazard and risk identification and reporting</li> <li>• WHS consultation and participative arrangements</li> <li>• reporting accidents, incidents, injuries and near misses</li> <li>• risk assessment and control measures</li> <li>• safe operating procedures and instructions for use of equipment and technology</li> <li>• use and maintenance of personal protective equipment</li> <li>• use, storage and disposal of hazardous substances or dangerous items</li> </ul>
<b>Hazard</b>	<p>Hazard relates to:</p> <ul style="list-style-type: none"> <li>• a thing, including an intrinsic property of a thing, or situation with the potential to cause injury or harm</li> </ul>
<b>Hazard identification</b>	<p>Hazards may be identified through:</p> <ul style="list-style-type: none"> <li>• continuous monitoring of work environment</li> <li>• debrief and review of incidents</li> <li>• regular formal and informal discussions with colleagues</li> <li>• regular inspections of equipment and work area</li> <li>• review of workplace health and safety records</li> </ul>
<b>Risk</b>	<p>Risk relates to</p> <ul style="list-style-type: none"> <li>• the likelihood of a hazard causing injury or harm</li> </ul>
<b>Risk control</b>	<p>Procedures for controlling risks may include:</p> <ul style="list-style-type: none"> <li>• application of the hierarchy of control</li> <li>• basic risk assessment</li> <li>• communicating WHS information to others</li> <li>• complying with safe operating procedures for equipment</li> <li>• correct selection, use, storage and maintenance procedures for personal protective equipment</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• evacuation</li> <li>• maintaining vigilance, awareness and observation in the work environment</li> <li>• reporting of identified risks or hazards</li> <li>• requests for backup support or instructions</li> <li>• safe lifting and manual handling</li> <li>• security of documents, cash, equipment and persons</li> <li>• use of fire safety equipment</li> </ul>
<b>Emergency situations</b>	<p>Emergency situations may include:</p> <ul style="list-style-type: none"> <li>• accidents</li> <li>• collapse or partial collapse of buildings or structures</li> <li>• damage to people or property</li> <li>• explosion</li> <li>• fire</li> <li>• natural disasters</li> <li>• spill or release of toxic chemicals or biological substances</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• hardcopy and electronic media</li> <li>• verbal, written and graphical information</li> <li>• safe work procedures related to motorsport officiating and volunteering</li> <li>• regulatory/legislative requirements pertaining to motorsport officiating and volunteering</li> <li>• Federation Internationale de l'Automobile (FIA) and Federation Internationale Motocycliste (FIM) policies and procedures</li> <li>• National Competition Rules (NCR) and event supplementary regulations</li> <li>• motorsport organisation manuals, code of conduct, policies and procedures</li> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event policies and procedures relating to work areas, authorities and lines of communication</li> <li>• task instructions, including briefings, worksheets, checklists and plans</li> </ul>

<b>RANGE STATEMENT</b>	
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"><li>• personal protective equipment and clothing</li><li>• safety equipment</li><li>• first aid equipment</li><li>• hazard and risk control</li><li>• elimination of hazardous materials and substances</li><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li></ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice and may include:</p> <ul style="list-style-type: none"><li>• award and enterprise agreements</li><li>• industrial relations</li><li>• confidentiality and privacy</li><li>• WHS</li><li>• the environment</li><li>• equal opportunity</li><li>• anti-discrimination</li><li>• relevant industry codes of practice</li><li>• duty of care</li></ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include but are not limited to:</p> <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• habitat, flora and fauna protection</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li><li>• industry codes of practice</li><li>• safe work procedures</li></ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• communication, reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Health and Safety
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## AURMSA3002 Implement and monitor safety and risk management in a motorsport environment

### Modification History

Release	Comment
Release 1	<p>Replaces AURMO3001A Implement and monitor safety and risk management in a motorsport environment</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to implement predetermined workplace health and safety (WHS) policies and procedures and to monitor WHS practices and manage risks as a supervisory function.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake a leadership role to promote and monitor the application of safe work practices and control of risks within teams of officials, contractors and volunteers in motorsport events, including practice sessions. They have a key role in ensuring the safe conduct of events and in influencing the ongoing safety of the workplace.</p> <p>Under WHS law, all organisations must ensure the health, safety and welfare at work of all employees and the safety of people, other than their workers, who may be present at the workplace. In the motorsport industries, the workplace would include any location where an event is held and 'others' would include contractors, volunteers, competitors and spectators.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Provide information on health, safety and control of risks	<p>1.1. Accurately and clearly explain to personnel relevant WHS information, including organisation-specific policies and procedures</p> <p>1.2. Make all current and updated WHS information readily accessible to staff in a timely and regular manner according to organisational procedures</p> <p>1.3. Regularly provide information and clearly explain to the work group information about identifying hazards and controlling risks</p> <p>1.4. Provide the opportunity for staff members to contribute their views on current and future WHS practices, including views on how to eliminate or control risks</p>
2. Monitor safe work practices	<p>2.1. Monitor ongoing compliance with safe work practices and vigilance on the job</p> <p>2.2. Take prompt and appropriate action to address non-compliance with procedures, safe work practices and non-attention to event conditions</p> <p>2.3. Monitor the effectiveness of work practices in maintaining the safety of personnel and managing risks through close attention to event operations and conditions</p> <p>2.4. Provide timely feedback on WHS management practices to designated person according to organisation procedures</p>
3. Implement and monitor procedures for identifying hazards, and assessing and controlling risks	<p>3.1. Provide advice on hazards in work area according to organisation WHS policies and procedures</p> <p>3.2. Support the implementation of procedures to control risks using the hierarchy of controls and in accordance with organisational procedures</p> <p>3.3. Monitor the effectiveness of control measures, promptly identify any inadequacies and resolve or report them to the appropriate person</p> <p>3.4. Report incidents and responses accurately in accordance with organisational procedures and legislative requirements</p>
4. Identify training needs	<p>4.1. Provide advice on WHS training needs of individuals and workgroup based on monitoring of team performance</p> <p>4.2. Provide coaching and mentoring assistance to team members and/or facilitate arrangements for fulfilling</p>

ELEMENT	PERFORMANCE CRITERIA
	training needs in consultation with appropriate management and according to organisation policies and procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to operate information and communications technology to access information
- communication skills to the level required to communicate and discuss WHS information, processes and concerns, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to read and interpret safety information, signs, symbols and notices, and to accurately record and report details of hazards, risks and incidents
- research skills to the level required to source information on motorsport industry safety issues within a defined range
- problem-solving skills to the level required to identify hazards in a motorsport environment, assess risks and to identify improvements in processes
- team skills to the level required to coordinate team adherence to safe work practices

#### Required knowledge

Required knowledge includes:

- responsibilities of employers and employees under relevant health and safety legislation
- organisational policies and procedures for WHS and risk management
- commonly used hazard signs and safety symbols
- common types and purpose of personal protective equipment
- communication procedures, including reporting lines, within the motorsport environment
- range of potential workplace hazards, risks and emergency situations
- basic principles of risk management
- procedures for reporting risks and hazards and documentation which needs to be completed
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environmental regulations, relevant to officiating or volunteering in a motorsport event
- organisational policies and procedures, including safety requirements, hazard identification, risk assessment and emergency response procedures, related to officiating or volunteering in a motorsport event

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> <li>• provide information and clear explanations to team members on health, safety and control of risks</li> <li>• monitor ongoing compliance of team with safe work practices</li> <li>• take prompt and appropriate action to address non-compliance with safe work practices</li> <li>• provide advice on hazards in the work area and support the implementation of procedures to control risks</li> <li>• participate in procedures for monitoring and improving safety and risk management policies</li> <li>• accurately record and report WHS risks and hazards using standard proformas or documentation</li> <li>• provide advice on WHS training needs of individuals and workgroup.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.</li> <li>• Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</li> <li>• Assessment is to comply with relevant regulatory requirements, including specified Australian standards.</li> <li>• Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• access to legislative and organisational information on WHS policies and procedures</li> <li>• access to suitable motorsport events</li> <li>• NCR and event supplementary regulations</li> <li>• applicable personal protection and safety equipment and resources.</li> </ul> </li> </ul>

## EVIDENCE GUIDE

### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

### Guidance information for assessment

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

### Motorsports

Motorsports may include:

- automobile (car, truck and cart), motorcycle and powerboat events
- competitions and practice sessions
- circuit, track, speedway, rally, road and off-road events
- club, state/territory, national and international

<b>RANGE STATEMENT</b>	
	events
<b>WHS policies and procedures</b>	<p>WHS policies and procedures may relate to:</p> <ul style="list-style-type: none"> <li>• application of first aid</li> <li>• emergency and evacuation response</li> <li>• equipment maintenance and use</li> <li>• hazard and risk identification and reporting</li> <li>• WHS consultation and participative arrangements</li> <li>• reporting accidents, incidents, injuries and near misses</li> <li>• risk assessment and control measures</li> <li>• safe operating procedures and instructions for use of equipment and technology</li> <li>• use and maintenance of personal protective equipment</li> <li>• use, storage and disposal of hazardous substances or dangerous items</li> </ul>
<b>Hazard</b>	<p>Hazard relates to:</p> <ul style="list-style-type: none"> <li>• any thing (including an intrinsic property of a thing) or situation with the potential to cause injury or harm</li> </ul>
<b>Hazard identification</b>	<p>Hazards may be identified through:</p> <ul style="list-style-type: none"> <li>• continuous monitoring of work environment</li> <li>• debrief and review of incidents</li> <li>• regular informal and informal discussions with colleagues</li> <li>• regular inspections of equipment and work area</li> <li>• review of workplace health and safety records</li> </ul>
<b>Risk</b>	<p>Risk relates to</p> <ul style="list-style-type: none"> <li>• the likelihood of a hazard causing injury or harm</li> </ul>
<b>Risk control</b>	<p>Procedures for controlling risks may include:</p> <ul style="list-style-type: none"> <li>• application of the hierarchy of control</li> <li>• basic risk assessment</li> <li>• communicating WHS information to others</li> <li>• complying with safe operating procedures for equipment</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• correct selection, use, storage and maintenance procedures for personal protective equipment</li> <li>• evacuation</li> <li>• maintaining vigilance, awareness and observation in the work environment</li> <li>• reporting of identified risks or hazards</li> <li>• requests for backup support or instructions</li> <li>• safe lifting and manual handling</li> <li>• security of documents, cash, equipment and persons</li> <li>• use of fire safety equipment</li> </ul>
<b>Emergency situations</b>	<p>Emergency situations may include:</p> <ul style="list-style-type: none"> <li>• accidents</li> <li>• collapse or partial collapse of buildings or structures</li> <li>• damage to people or property</li> <li>• explosion</li> <li>• fire</li> <li>• natural disasters</li> <li>• spill or release of toxic chemicals or biological substances</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• hardcopy and electronic media</li> <li>• verbal, written and graphical information</li> <li>• safe work procedures related to motorsport officiating and volunteering</li> <li>• regulatory/legislative requirements pertaining to motorsport officiating and volunteering</li> <li>• National Competition Rules (NCR) and event supplementary regulations</li> <li>• Federation Internationale de l'Automobile (FIA) and Federation Internationale Motocycliste (FIM) policies and procedures</li> <li>• motorsport organisation manuals, codes of conduct, policies and procedures</li> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event policies and procedures relating to work areas, authorities and lines of communication</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>task instructions, including briefings, worksheets, checklists and plans</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>personal protective equipment and clothing</li> <li>safety equipment</li> <li>first aid equipment</li> <li>hazard and risk control</li> <li>elimination of hazardous materials and substances</li> <li>manual handling, including shifting, lifting and carrying</li> <li>emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>award and enterprise agreements</li> <li>industrial relations</li> <li>confidentiality and privacy</li> <li>WHS</li> <li>the environment</li> <li>equal opportunity</li> <li>anti-discrimination</li> <li>relevant industry codes of practice</li> <li>duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management</li> <li>noise</li> <li>habitat, flora and fauna protection</li> <li>clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>WHS, sustainability, environment, equal opportunity and anti-discrimination policies and procedures</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"><li>• industry codes of practice</li><li>• safe work procedures</li><li>• communication, reporting and recording procedures</li></ul>



## Unit Sector(s)

Unit sector	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Health and Safety
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## AURMTA2001 Prepare and service a light competition vehicle

### Modification History

Release	Comment
Release 1	Replaces AURM240174A Prepare and service a light competition vehicle Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to prepare and service an already assembled light competition vehicle in the workshop or at an event.</p> <p>It requires the ability to use skills to prepare the competition vehicle in accordance with team requirements and event supplementary regulations, including cleaning, securing, shielding and checking the vehicle.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake the preparation of a light competition vehicle in a motorsports environment.</p> <p>For the purposes of this unit of competency, light competition vehicles are vehicles under 300 kg unladen weight, such as a go-carts, motorbikes and jet skis.</p> <p>Competition vehicles can be described as vehicles which compete in any motorsport event of a competitive nature.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Identify job requirements 1.2. Identify specifications for required operating conditions and supplementary regulations 1.3. Identify steps and stages in the vehicle repair process 1.4. Identify procedures for minimising waste material 1.5. Clean work area and lay out to meet job requirements 1.6. Organise and check tooling and equipment for safe and effective operation 1.7. Observe workplace health and safety (WHS) requirements throughout the work 1.8. Report any problems with the work area or the operation of the equipment to appropriate persons
2. Prepare competition vehicle	2.1. Clean competition vehicle 2.2. Identify vehicle securing locations 2.3. Fit and secure vehicle transportation devices, components and covers 2.4. Shield vehicle components, as appropriate 2.5. Report any problems with vehicle to appropriate persons
3. Check competition vehicle	3.1. Check and top-up vehicle fluids 3.2. Remove temporary bungs and covers 3.3. Conduct engine pre-start checks 3.4. Check pressures and temperatures and for noises and leaks 3.5. Check sub-assembly and systems operation 3.6. Report potential or existing problems to appropriate persons
4. Clean up work area and maintain records	4.1. Maintain tooling and return to storage 4.2. Pack and store surplus components/consumables 4.3. Clean vehicle 4.4. Complete team documentation

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology, including tooling, equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information to enable clarification of requirements, coordination of work with supervisors and other team members, and reporting of work outcomes and problems
- literacy skills to the level required collect, organise, report and understand information related to competition vehicle preparation, team requirements, manufacturer/component supplier specifications, plans and safety procedures
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during preparation of a competition vehicle
- problem-solving skills to the level required to use checking and inspection techniques to anticipate problems in order to work efficiently and effectively
- team skills to the level required to work with others to foster the team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- approaches to optimise workflow within strict timeframes
- planning skills to the level required to plan and organise activities, including preparation and layout of the work area, tools and equipment, to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- team requirements/job specifications
- work area and component layouts
- cleaning methods and precautions
- types of securing devices and securing methods
- types of shielding devices and shielding methods
- record keeping techniques
- team procedures for reporting equipment faults and component defects
- workplace guidelines
- team WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to preparing and servicing a light competition vehicle



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage to competition vehicle
  - achieve required outcomes within team time and quality standards
- correctly prepare and service a light competition vehicle on a minimum of two (2) occasions covering each of the following:
  - cleaning of vehicle
  - conducting vehicle checks
  - assisting in setting vehicle baseline configuration
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• non-complex competition vehicles</li> <li>• work instructions and deadlines</li> <li>• tools, materials and equipment</li> <li>• team procedures</li> <li>• safety procedures and regulations</li> <li>• quality standards.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>RANGE STATEMENT</b>	
<b>Light competition vehicles</b>	Light competition vehicles may include: <ul style="list-style-type: none"><li>• motorcycles</li><li>• watercraft modified or built specifically for competition</li><li>• go-carts</li><li>• motorbikes</li><li>• jet skis</li></ul>
<b>Ancillary systems</b>	Ancillary systems may include: <ul style="list-style-type: none"><li>• pneumatic</li><li>• fluid</li><li>• communications</li><li>• electrical/electronic</li><li>• fire systems</li></ul>
<b>Critical components</b>	Critical components may include: <ul style="list-style-type: none"><li>• electronic control units</li><li>• data acquisition system components</li><li>• communication equipment</li><li>• circuit breakers, and relay and isolation switches</li><li>• fuel tank/cell</li><li>• pumps and reservoirs</li><li>• fire bottles and controller</li></ul>
<b>Securing methods</b>	Securing methods may include: <ul style="list-style-type: none"><li>• general fasteners (e.g. bolts, screws and rivets)</li><li>• specialist motorsport fasteners (e.g. dzus fasteners)</li><li>• line clamps</li></ul>
<b>Shielding</b>	Shielding may include protection from: <ul style="list-style-type: none"><li>• heat</li><li>• vibration</li><li>• radio frequency interference</li><li>• impact</li></ul>
<b>Cleaning methods</b>	Cleaning methods may include: <ul style="list-style-type: none"><li>• solvent baths</li><li>• chemical cleaning</li><li>• pressure cleaning</li><li>• bead blasting</li></ul>

**RANGE STATEMENT****WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing, including closed shoes, long trousers, fire-retardant gloves, crash helmets and other equipment
- safety equipment
- first aid equipment
- hazard and risk control
- control of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- material safety management systems
- team requirements
- manufacturer specifications
- local safe operating procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- duty of care

**Tooling and equipment**

Tooling and equipment may include:

- component supplier specified tooling
- non-destructive testing equipment
- measuring devices
- hand and power tooling

**Information and procedures**

Information and procedures may include:

- controlling body rules, category rules and

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>supplementary regulations</li><li>team procedures and standards relating to:<ul style="list-style-type: none"><li>preparing competition vehicles</li><li>reporting and communication</li><li>use of tooling and equipment</li><li>emergency service contacts and team persons emergency contacts</li><li>team emergency and event procedures for accidents or injury</li></ul></li><li>work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li><li>manufacturer/component supplier specifications and application procedures for test equipment and material</li><li>Australian Design Rules (where applicable)</li><li>safety body publications</li><li>environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURMTA3002 Assemble and prepare a competition vehicle

### Modification History

Release	Comment
Release 1	Replaces AURM340204B Assemble and prepare a competition vehicle Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to assemble and prepare a competition vehicle.</p> <p>It requires the ability to use technical skills to prepare components, install sub-assemblies and systems, and set vehicle baseline configuration in accordance with team requirements, supplementary regulations and component supplier specifications.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake the assembly and preparation of a competition vehicle in a motorsports environment.</p> <p>A competition vehicle can be described as any vehicle which competes in any event of a competitive nature under one of the following categories: race, speed, rally road, off road, auto test and timed event.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>	
AURLTD3006	Carry out wheel alignment operations (light vehicle)
AURMTA3006	Perform torquing and fastening
AURMTA3007	Conduct non-destructive testing

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collect information and analyse assembly requirements	1.1. Use team instructions, supplementary regulations and component supplier specifications to clarify job requirements, including design, quality, material, equipment and quantities 1.2. Check specifications for required operating conditions and seek clarification of specifications, where required 1.3. Observe workplace health and safety (WHS) requirements, including equipment and system isolation requirements and personal protection needs, throughout the work 1.4. Clarify steps and stages in the process 1.5. Make proposals for modifications or adaptation of equipment 1.6. List and communicate component requirements to appropriate persons 1.7. Locate procedures for minimising waste material
2. Prepare work area and equipment	2.1. Locate tooling and equipment and check for safe and effective operation 2.2. Clean and lay out work area for job requirements 2.3. Report problems with the work area or the operation of the equipment to appropriate persons
3. Prepare components for assembly	3.1. Clean components to facilitate pre-assembly inspection 3.2. Take precautions to avoid component damage 3.3. Inspect and organise components for function and quality to ensure optimum use of resources 3.4. Report problems with the components to appropriate persons
4. Install sub-assemblies	4.1. Inspect sub-assemblies for quality and readiness for installation 4.2. Use installation sequences and techniques 4.3. Install sub-assemblies and tension fasteners to team/component supplier specifications 4.4. Make checks during and after installation to ensure accurate and complete fitting 4.5. Report problems with sub-assemblies to appropriate persons
5. Install ancillary	5.1. Locate critical components on the basis of function,

ELEMENT	PERFORMANCE CRITERIA
systems	<p>susceptibility to damage and ease of maintenance</p> <p>5.2.Install critical components and tension fasteners to team/component supplier specifications</p> <p>5.3.Confirm optimum layout for wiring loom, connectors, hoses, hard lines and ancillary components</p> <p>5.4.Install wiring loom, connectors, hoses, hard lines and ancillary components and tension fasteners to team/component supplier specifications</p> <p>5.5.Secure entire installation and shield to maximise reliability and minimise susceptibility to damage</p> <p>5.6.Make checks during and after installation to ensure accurate and complete fitting</p> <p>5.7.Report problems with the components to appropriate persons</p>
6. Conduct post-assembly checks	<p>6.1.Check fluids and top up, as required</p> <p>6.2.Remove temporary bungs and covers</p> <p>6.3.Conduct engine pre-start checks</p> <p>6.4.Check pressures, temperatures, noises and leaks</p> <p>6.5.Check sub-assembly and systems operation</p>
7. Set vehicle baseline configuration	<p>7.1.Use team instructions, category regulations and component supplier specifications are used to clarify vehicle baseline settings</p> <p>7.2.Establish a level surface to place vehicle on for set-up</p> <p>7.3.Install springs and dampers</p> <p>7.4.Measure and adjust ride height, if necessary</p> <p>7.5.Measure and adjust corner weight, if necessary</p> <p>7.6.Measure and adjust steering angles, if necessary</p> <p>7.7.Report potential or existing problems in accordance with enterprise procedures</p>
8. Clean up work area and maintain records	<p>8.1.Maintain tooling and return to storage</p> <p>8.2.Tag and shelve/store surplus components/consumables</p> <p>8.3.Remove all surplus material from work area</p> <p>8.4.Clean up spillage from work area and vehicle</p> <p>8.5.Complete team/component supplier documentation</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to torquing and fastening, including tooling, equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information to enable clarification of requirements, coordination of work with supervisors and other team members, and to report work outcomes and problems
- literacy skills to the level required collect, organise and understand information related to competition vehicle assembly and preparation, team requirements, manufacturer/component supplier specifications, plans and safety procedures
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during assembly of a competition vehicle
- problem-solving skills to the level required to use pre-checking and inspection techniques to anticipate assembly problems in order to work efficiently and effectively
- team skills to the level required to work with others to foster the team by recognising dependencies and using cooperative approaches to optimise workflow and productivity within strict timeframes
- planning skills to the level required to plan and organise activities, including preparation and layout of the work area, and the coordination of equipment, systems and material to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules, supplementary regulations, component supplier specifications and team requirements/job specifications
- work area and component layout
- component cleaning methods and precautions
- sub-assembly and system installation sequence and techniques
- critical components location selection
- optimum layout for conduits and ancillary components
- types of securing devices and securing methods
- types of shielding devices and shielding methods
- vehicle baseline configuration
- record keeping techniques

**REQUIRED SKILLS AND KNOWLEDGE**

- procedures for reporting equipment faults and component defects
- workplace guidelines regarding acceptable tolerance levels
- WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to assembling and preparing a competition vehicle

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly assemble and prepare a minimum of two (2) competition vehicles covering each of the following:
  - install electrical/electronic systems
  - install fluid/pneumatic/fire systems
  - conduct post-assembly checks
  - set vehicle baseline configuration
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to

**EVIDENCE GUIDE**

	<p>accommodate ethnicity, age, gender, demographics and disability.</p> <ul style="list-style-type: none"> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>work instructions and deadlines</li> <li>computing, operational and inventory support systems</li> <li>material, equipment and work specifications information</li> <li>customer requirements</li> <li>organisational procedures</li> <li>safety procedures and regulations</li> <li>quality standards.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Competition vehicles**

Competition vehicles may include:

- motorcycles
- cars
- trucks
- watercraft (modified or built specifically for competition)

**Ancillary systems**

Ancillary systems may include:

- pneumatic
- fluid
- communications
- electrical/electronic
- fire systems

**Critical components**

Critical components may include:

- electronic control units
- data acquisition system components
- communication equipment
- circuit breakers, relays and isolation switches
- fuel tank/cell
- pumps and reservoirs
- fire bottles and controller

**Securing methods**

Securing methods may include:

- tie wraps
- spiral wrap/heat shrink
- line clamps

**Shielding**

Shielding may include protection from:

- heat
- vibration
- radio frequency interference
- impact

**Cleaning methods**

Cleaning methods may include:

- solvent baths

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• chemical cleaning</li> <li>• pressure cleaning</li> <li>• ultrasonic cleaning</li> <li>• bead blasting</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing, including closed shoes, long trousers, fire-retardant gloves, crash helmets and other equipment</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• team insurance requirements</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer specifications</li> <li>• local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment must include component

<b>RANGE STATEMENT</b>	
	<p>supplier specified tooling and may include:</p> <ul style="list-style-type: none"> <li>• non-destructive testing equipment</li> <li>• measuring devices</li> <li>• hand and power tooling</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures and standards relating to: <ul style="list-style-type: none"> <li>• assembling and preparing competition vehicles reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURMTA3004 Perform competition vehicle preparation procedures at an event

### Modification History

Release	Comment
Release 1	<p>Replaces AURM340851B Perform competition vehicle preparation procedures at an event</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform competition vehicle preparations at an event.</p> <p>It requires the ability to interpret category, event and 'on the day' team specifications, finalise technical preparations, conduct pre-race checks and post-race maintenance, and prepare a vehicle for scrutineering.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake competition vehicle preparation procedures at a motorsport event.</p> <p>A competition vehicle can be described as any vehicle which competes in any event of a competitive nature.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
AURMTA3002	Assemble and prepare a competition vehicle

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Use team instructions/specifications and category rules and supplementary regulations to determine job requirements, including configuration, quality, equipment and quantities</p> <p>1.2. Check task requirements against 'on the day' operating conditions and seek clarification of specifications, where required</p> <p>1.3. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs, throughout the work</p> <p>1.4. Locate tooling and equipment and check for safe and effective operation</p> <p>1.5. Clean and lay out work area for job requirements</p>
2. Finalise technical preparation	<p>2.1. Configure vehicle settings for each race in accordance with team specifications, baseline configurations, category rules and supplementary regulations</p> <p>2.2. Report problems with the work area or the operation of the equipment to appropriate persons</p> <p>2.3. Make proposals for modifications or adaptation of equipment</p> <p>2.4. Document settings in accordance with team procedures</p>
3. Conduct pre-race checks	<p>3.1. Conduct checks in accordance with team checklists</p> <p>3.2. Take precautions to ensure no component damage</p> <p>3.3. Report problems with the components or systems to appropriate persons</p>
4. Prepare vehicle for scrutineering	<p>4.1. Inspect vehicle systems and safety components in accordance with regulatory body requirements, category rules and supplementary regulations</p> <p>4.2. Identify and rectify problems with vehicle compliance</p> <p>4.3. Report problems with vehicle compliance that cannot be rectified to appropriate persons in accordance with team procedures</p>
5. Conduct between-race maintenance	<p>5.1. Inspect components/systems condition in accordance with team checklist and repair/replace, as required</p> <p>5.2. Clean and refuel vehicle</p> <p>5.3. Collect and log manual data/download and electronic</p>

ELEMENT	PERFORMANCE CRITERIA
	data 5.4. Conduct and/or contribute to driver/rider technical debrief
6. Clean up work area and finalise documentation	6.1. Return tooling to storage 6.2. Tag and shelve/store surplus components/consumables 6.3. Remove surplus material from work area 6.4. Clean spillage from work area and vehicle 6.5. Assist with loading of vehicle and equipment for transportation and undertake dismantling of temporary work location 6.6. Complete team/event documentation

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to preparation of a competition vehicle, including tooling, equipment, measuring devices and computers, and use pre-checking and inspection techniques to anticipate preparation problems in order to work efficiently and effectively
- communication skills to the level required to communicate ideas and information to enable clarification of requirements, coordination of work with supervisors and other team members, and to report work outcomes and problems
- literacy skills to the level required to collect, organise and understand information related to competition vehicle preparation, team requirements, category rules and supplementary regulations, component suppliers' specifications, plans and safety procedures requirements, and financial reporting to ensure compliance with rules and regulations
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during the preparation of a competition vehicle
- problem-solving skills to the level required to anticipate changing information requirements or influences
- team skills to the level required to work with others to foster the team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area, and the coordination of equipment, systems and material to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations and team requirements/job specifications
- work area layouts
- preparation processes applicable to competition vehicles at an event
- scrutineering requirements and inspection techniques
- gear ratio calculations
- pre-race checks and between-race maintenance conduct
- equipment faults and component defects reporting procedures
- workplace guidelines regarding:
  - acceptable tolerance levels

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• record keeping techniques</li><li>• applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, reporting and recording procedures, relevant to vehicle preparation procedures</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply controlling body and category rules and supplementary regulations
- apply safety requirements, including the use of personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly perform competition vehicle preparation procedures at a minimum of two (2) events, one (1) of which may be a simulated event. Each of the following must be covered:
  - finalise technical preparation prior to a race
  - conduct pre- and post-race checks and maintenance
  - prepare a vehicle for scrutineering
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• access to competition vehicles and associated tooling</li> <li>• computing, operational and inventory support systems</li> <li>• work specifications</li> <li>• team requirements</li> <li>• organisational procedures</li> <li>• safety procedures and regulations</li> <li>• quality standards.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

**RANGE STATEMENT**

regional contexts) may also be included.

**An event**

An event can be defined as the race meeting itself. This may be the whole day, weekend or week

**A race**

A race can be defined as one part or section of the program during an event and may include:

- team promotional ride (e.g. teams may have ride days for their sponsors)
- heat (e.g. teams may have multiple heats to complete during the same event)
- test run (e.g. practice runs or qualifying runs during the same event)
- time trial (e.g. any run during the same event where they are timed over the distance)

**Components/systems to be inspected**

Components/systems to be inspected may include:

- consumable items, such as tyres and brake pads
- non-consumable components, such as steering linkages and drive shafts

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures
- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory

**RANGE STATEMENT**

	<p>legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Vehicle settings</b>	<p>Vehicle settings may include:</p> <ul style="list-style-type: none"> <li>• aerodynamic devices</li> <li>• engine/engine management</li> <li>• driveline, including gear ratios</li> <li>• suspension</li> <li>• driver/rider comfort considerations</li> <li>• fuel load</li> <li>• brakes</li> <li>• data acquisition system</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• measuring devices</li> <li>• refuelling equipment</li> <li>• hand tools</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures and standards relating to: <ul style="list-style-type: none"> <li>• competition vehicle preparation</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> <li>• safety requirements</li> </ul> </li> <li>• work instructions, including worksheets,</li> </ul>

**RANGE STATEMENT**

	<p>material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</p> <ul style="list-style-type: none"><li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURMTA3005 Perform pit lane and service area operations

### Modification History

Release	Comment
Release 1	Replaces AURM340951B Perform pit lane/ service area operations Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform pit lane and service operations within the time constraints of motorsport events.</p> <p>It requires the technical ability to prepare for vehicle stops, service and perform adjustments or emergency repairs during stops, and conduct post-stop clean-ups.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake repairs, adjustments and service work on competition vehicles during pit lane, pit bay or service area stops in a motorsports environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Use team instructions/specifications and category rules and supplementary regulations to determine job requirements, including configuration, quality, equipment and quantities</p> <p>1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements, complying with controlling body rules, category rules and supplementary regulations, equipment and system isolation requirements, and personal protection needs, throughout the work</p> <p>1.3. Position equipment and tooling and eliminate hazards and obstacles to ensure path of movement</p> <p>1.4. Locate tooling and equipment and check for safe and effective operation</p> <p>1.5. Clean and lay out work area for job requirements</p>
2. Follow pit lane/service area safety procedures	<p>2.1. Fit jacks and other lifting devices, including lifting lock-outs, prior to underbody servicing</p> <p>2.2. Follow fire hazard and prevention procedures according to team procedures or event category rules and supplementary regulations</p> <p>2.3. Use pit lane/service area signals according to team procedures, and event category rules and supplementary regulations</p> <p>2.4. Follow event category and supplementary regulations relating to pit lane/service area operations</p> <p>2.5. Monitor non-team persons access to pit area and walkways according to team procedures</p>
3. Conduct pit stop/competition vehicle service	<p>3.1. Check competition vehicle components according to team pit stop/service area schedule</p> <p>3.2. Perform minor adjustments in accordance with instructions</p> <p>3.3. Conduct emergency repairs in accordance with instructions</p> <p>3.4. Replace components, as required</p> <p>3.5. Modify work practices and pit stop/service area procedures to manage contingency issues</p> <p>3.6. Report problems to team members</p>
4. Conduct post-stop clean-up	<p>4.1. Prepare and position tooling and equipment ready for the next vehicle stop</p> <p>4.2. Tag and shelve/store surplus</p>

ELEMENT	PERFORMANCE CRITERIA
	components/consumables 4.3.Clean spillage and dispose of correctly 4.4.Complete team/event documentation

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing and conducting emergency repairs on a competition vehicle, including tooling, equipment and measuring devices, and use checking and inspection techniques
- communication skills to the level required to communicate ideas and information to respond to issues during pit stops/competition and vehicle servicing, and to report problems for post-stop or post-event analysis
- literacy skills to the level required to collect, organise and understand information related to servicing procedures and emergency repairs
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and adjustments
- problem-solving skills to the level required to identify faults or required adjustments and analysis and judgement when interpreting instructions for adjustment and emergency repair within strict timeframes
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow within strict timeframes
- planning skills to the level required to plan and organise activities, including conduct of service procedures to avoid backtracking or workflow interruptions

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations and team requirements/job specifications
- work area layout at an event
- preparation processes applicable to pit stops/service area
- pit stop/service area sequence and conduct
- pit/lane service area signals and communication techniques
- emergency repair methods and techniques
- record keeping techniques
- equipment faults and component defects reporting procedures
- workplace guidelines regarding acceptable tolerance levels
- WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to

**REQUIRED SKILLS AND KNOWLEDGE**

performing pit lane servicing operations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly perform pit lane/service area operations on a minimum of 2 (two) occasions, both of which must be at an appropriate event
- work with and around other team members
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - process equipment, material, work instructions and deadlines
  - access to a competition vehicle at an appropriate event

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>motorsport team procedures and instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Servicing of the vehicle</b>	<p>Servicing of the vehicle as allowed in:</p> <ul style="list-style-type: none"> <li>event category and supplementary regulations</li> <li>emergency repairs</li> <li>supporting driver changeover</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Stops</b>	<p>Stops include:</p> <ul style="list-style-type: none"> <li>• scheduled stops according to event category/ supplementary regulations</li> <li>• unscheduled stops for emergency repairs or refuelling</li> </ul>
<b>Pit stops/competition vehicle servicing tasks</b>	<p>Pit stops/competition vehicle servicing tasks may include:</p> <ul style="list-style-type: none"> <li>• replacing tyres/wheels</li> <li>• refuelling</li> <li>• cleaning windscreen/visor/fairing/screen</li> <li>• minor adjustments (e.g. wing angles and roll centres)</li> <li>• removing pit stop notification tag</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing, including closed shoes, long trousers, fire-retardant gloves, crash helmets and other equipment</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• control of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• team insurance requirements</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer specifications</li> <li>• local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• gas bottles and boom</li> <li>• toolbox components (e.g. spanners, wrenches and screwdrivers)</li> <li>• race tape</li> <li>• impact (rattle) gun</li> <li>• refuelling churns/rigs</li> <li>• lubricants and coolants</li> <li>• tyre pressure gauges and pyrometers</li> <li>• go-jacks</li> <li>• safety jacking stands</li> <li>• lifting stands</li> <li>• tyre warmers</li> <li>• restarting equipment</li> </ul>
<b>Material</b>	<p>Material may include:</p> <ul style="list-style-type: none"> <li>• automotive fuel</li> <li>• coolants</li> <li>• lubricants and cleaning agents</li> <li>• supplementary regulations</li> <li>• team procedures</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures and standards relating to:             <ul style="list-style-type: none"> <li>• pit lane/service area operations</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> </ul> </li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li><li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURMTA3006 Perform torquing and fastening

### Modification History

Release	Comment
Release 1	Replaces AURM341051B Perform torquing and fastening Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to torque and fasten competition vehicle components according to supplier and team specifications.</p> <p>It requires the ability to prepare components, select tools and use fastener securing methods.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake torquing and fastening in a motorsports environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Read and interpret component supplier and team torquing and fastening specifications</li><li>1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work</li><li>1.3. Check tools and equipment for safe and effective operation</li><li>1.4. Clean and lay out work area for job requirements</li><li>1.5. Report problems with the work area and/or the operation of the equipment to appropriate persons</li></ul>
2. Fasten components	<ul style="list-style-type: none"><li>2.1. Select materials according to application</li><li>2.2. Inspect and prepare components for assembly</li><li>2.3. Use installation sequences and techniques to assemble components, including applying/installing gaskets, sealants, adhesives and/or lubricants</li><li>2.4. Tension fasteners in stages and sequence to team/component supplier specifications</li><li>2.5. Check during and after installation to ensure accurate and complete fitting</li><li>2.6. Fit mechanical fastener securing devices</li><li>2.7. Check sealant and liquid locking adhesive cure times observed, if applicable</li><li>2.8. Report problems with the components to appropriate persons</li></ul>
3. Clean up work area and complete record keeping	<ul style="list-style-type: none"><li>3.1. Return tools to storage</li><li>3.2. Tag and shelve/store surplus components</li><li>3.3. Remove all surplus material from work area</li><li>3.4. Clean up all spillage from work area and vehicle</li><li>3.5. Complete team/component supplier documentation</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use the workplace technology related to torquing and fastening, including tools, equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with technical supervisors, other technicians and workers, and to report work outcomes and problems
- literacy skills to the level required to collect, organise and understand information related to torquing and fastening operations, work orders, plans, checklists and safety procedures
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and procedures to team specifications
- problem-solving skills to the level required to use pre-checking and inspection techniques to anticipate torquing and fastening problems in order to work efficiently and effectively
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise work flow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area and the obtaining of equipment and materials to avoid any backtracking, work flow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- types, characteristics, uses and limitations of fasteners used in motorsport/performance enhancement, including material stress
- the types, characteristics, uses and limitations of mechanical locking devices (e.g. lock wire and lock tabs) and chemical/liquid fastener locking devices (e.g. liquid locking compounds/adhesives), including shelf life expiry
- torquing principles, applications, methods, techniques and preparation of components for assembly
- regulatory requirements relating to securing of fasteners
- record keeping techniques
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to performing torquing and fastening



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly fasten a minimum of six (6) different components/sub-assemblies which include:
  - identifying compatibility/incompatibility of materials, adhesives, fittings and fasteners for the application
  - selecting and applying assembly, torquing and fastening techniques
  - ensuring that the assembly satisfies the specification
  - and where the components/sub-assemblies necessitate, the use of a range of fasteners, sealants and fasteners securing devices
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to

<b>EVIDENCE GUIDE</b>	
	<p>accommodate ethnicity, age, gender, demographics and disability.</p> <ul style="list-style-type: none"> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>process equipment, materials, work instructions and deadlines</li> <li>access to components, fasteners, assemblies, tools and equipment.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and</p>

**RANGE STATEMENT**

regional contexts) may also be included.

**Torque measurements and fastener tensions**

Torque measurements and fastener tensions are undertaken using:

- conventional torque wrenches
- angular torque tools
- strain gauges

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements
- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- duty of care

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>health regulations</li> </ul>
<b>Tools and equipment</b>	<p>Tools and equipment may include:</p> <ul style="list-style-type: none"> <li>torque (tension) wrenches</li> <li>angular torque tools</li> <li>dial test indicators</li> <li>feeler gauges</li> <li>special service tools</li> <li>general hand tools</li> <li>strain gauges</li> <li>vertical height gauges</li> <li>gauge blocks</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>type and grade of fastener</li> <li>liquid locking adhesive and primers</li> <li>gasket and/or sealant</li> <li>lock wire/lock tabs or other mechanical fastener securing devices</li> </ul>
<b>Fasteners</b>	<p>Fasteners may include:</p> <ul style="list-style-type: none"> <li>threaded fasteners</li> <li>quick release fasteners</li> <li>sheet metal fasteners (e.g. rivets)</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>controlling body rules, category rules and supplementary regulations</li> <li>team procedures and standards related to: <ul style="list-style-type: none"> <li>performing torquing and fastening</li> <li>competition vehicle assembly</li> <li>reporting and communication</li> <li>use of tooling and equipment</li> <li>emergency service contacts and team persons emergency contacts</li> <li>team emergency and event procedures for accidents or injury</li> </ul> </li> <li>work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>manufacturer/component supplier</li> </ul>

**RANGE STATEMENT**

	<p>specifications and application procedures for test equipment and material</p> <ul style="list-style-type: none"><li>• Australian Design Rules (where applicable)</li><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURMTA3007 Conduct non-destructive testing

### Modification History

Release	Comment
Release 1	Replaces AURM340550B Conduct non-destructive testing Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to perform non-destructive testing on competition vehicle components and materials.</p> <p>It requires the ability to use technical skills to prepare for and conduct non-destructive testing.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who conduct non-destructive testing of competition vehicle components in order to determine component serviceability by checking for material defects and malfunctions in a motorsport environment.</p> <p>It also applies to workplaces involved in the design, development, manufacture and maintenance of performance vehicles or performance vehicle components and assemblies used in motorsport.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for non-destructive testing	<p>1.1. Use team instructions, controlling body rules, category rules, supplementary regulations and component supplier specifications to determine job requirements, including quality, materials, equipment and quantities</p> <p>1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs, throughout the work</p> <p>1.3. Clean and prepare inspection areas for testing using procedures and materials</p> <p>1.4. Check tooling and equipment for safe and effective operation</p> <p>1.5. Prepare test equipment for non-destructive testing in accordance with equipment manufacturer/supplier instructions and team requirements</p> <p>1.6. Report problems with the work area or the operation of equipment to appropriate persons</p>
2. Perform non-destructive testing	<p>2.1. Specify testing methods using standard operating procedures and team requirements</p> <p>2.2. Identify hazards associated with testing and identify safety requirements</p> <p>2.3. Carry out testing in accordance with task instructions, team procedures and WHS requirements</p> <p>2.4. Identify non-conformance and defects against component manufacturer/supplier specifications and team standards</p> <p>2.5. Verify test results</p> <p>2.6. Document test results in accordance with team procedures</p>
3. Clean up work area	<p>3.1. Maintain and store testing equipment in accordance with team procedures and WHS requirements</p> <p>3.2. Clean and prepare work area for subsequent use</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to non-destructive testing, including tooling, equipment and measuring devices, and to use pre-checking and inspection techniques to anticipate issues to avoid reworking and wastage
- communication skills to the level required to communicate ideas and information to enable confirmation of work requirements, coordination of work with technical supervisors, other technicians and workers, and to report work outcomes and problems
- literacy skills to the level required to collect, analyse, organise and understand information related to non-destructive test results
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and estimate material requirements required for the work
- problem-solving skills to the level required to anticipate changing information requirements or influences
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area, and obtaining equipment and material to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- principles and methods of penetrant, magnetic and Rockwell and Brinell hardness testing, including limitations, advantages and hazards associated with testing
- non-destructive testing terminology
- non-destructive test equipment use, maintenance and storage
- non-destructive testing preparation procedures
- non-destructive testing verification methods and techniques
- non-destructive testing analysis techniques
- techniques for recording results of non-destructive testing
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, reporting and recording procedures, relevant to non-destructive testing



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- prepare equipment for testing (including zeroing and calibration checks)
- correctly conduct non-destructive testing on a minimum of four (4) components. Each component must be tested using at least two (2) testing methods as detailed in the range statement. Each of the following must be covered:
  - select and apply testing methods
  - verify results
  - record outcomes
- perform work within team quality and timeliness standards
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to

**EVIDENCE GUIDE**

	<p>work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <ul style="list-style-type: none"> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>process equipment</li> <li>material work instructions and deadlines</li> <li>tooling and equipment.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>RANGE STATEMENT</b>	
<b>Non-destructive testing equipment</b>	<p>Non-destructive testing equipment may include:</p> <ul style="list-style-type: none"> <li>• dye penetrant</li> <li>• magnetic particle</li> </ul>
<b>Components to be tested</b>	<p>Components to be tested may include those used in the construction of competition vehicles, such as:</p> <ul style="list-style-type: none"> <li>• final drive</li> <li>• steering</li> <li>• brake</li> <li>• roll cage</li> <li>• gear components</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer specifications</li> <li>• local safe operating procedures</li> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• team insurance requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• dye penetrant test kit</li> <li>• magnetic particle test kit</li> </ul>
<b>Material</b>	<p>Material may include:</p> <ul style="list-style-type: none"> <li>• material used for construction of competition vehicle components</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures and standards relating to: <ul style="list-style-type: none"> <li>• conducting non-destructive testing</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> <li>• safety requirements</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURMTA3009 Collect and log motorsport data

### Modification History

Release	Comment
Release 1	Replaces AURM340312B Collect and log motorsport data Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to collect and log motorsport data.</p> <p>It requires the ability to identify the data, prepare collection methods and systems, and use technical skills to collect and evaluate data.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake data collection and logging in a motorsports environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify situations where motorsport data is required	1.1. Clarify purpose of data collection 1.2. Clarify sources of data 1.3. Use team instructions and procedures to specify data requirements 1.4. Clarify end users of motorsport data 1.5. Interpret controlling body rules, category rules and supplementary regulations 1.6. Observe workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs, throughout the work
2. Prepare resources for data collection	2.1. Develop checklists/recording sheets according to team specifications 2.2. Prepare manual instruments for data collection 2.3. Check electronic data acquisition system settings 2.4. Check and adjust equipment settings, calibration and system in accordance with task requirements and equipment manufacturer instructions 2.5. Conduct trial runs to check equipment and procedures for function, accuracy and efficiency 2.6. Make necessary adjustments to equipment or procedures
3. Collect data	3.1. Carry out data acquisition system start-up procedure in accordance with manufacturer instructions 3.2. Operate data acquisition system in accordance with its designed capacity and purpose and to manufacturer recommendations 3.3. Estimate and describe potential for inaccurate results arising from variables 3.4. Collect data using manual and electronic methods 3.5. Check data for accuracy 3.6. Report problems with the required data or the operation of the equipment to appropriate persons
4. Log data	4.1. Import selected data into data analysis software 4.2. Evaluate data for preliminary indication of non-conformity and trends or patterns 4.3. Collate findings from data and report to appropriate persons 4.4. Store data for later retrieval in accordance with team procedures

ELEMENT	PERFORMANCE CRITERIA
5. Maintain data acquisition equipment	<p>5.1.Clean, maintain and prepare equipment and support material ready for further use and store in accordance with manufacturer specifications and team requirements</p> <p>5.2.Conduct systems check</p> <p>5.3.Tag unserviceable equipment and document faults in accordance with team procedures</p> <p>5.4.Complete operator maintenance in accordance with manufacturer specifications and team procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use technology related to preparing for and collecting data electronically, data representation and the maintenance of data acquisition systems, including electronic data acquisition systems, calculators and measuring devices and computer-aided systems
- communication skills to the level required to communicate effectively regarding work requirements and specifications with the supervisor and with other workers within the team, to communicate ideas and information, to report data collection and data systems outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, and to interpret team requirements, technical information and specifications
- numeracy skills to the level required to accurately collect, log, represent and analyse data
- problem-solving skills to the level required to anticipate changing information requirements or influences
- team skills to the level required to work effectively and cooperatively with others to recognise dependencies, and use cooperative approaches to optimise workflow and productivity

#### Required knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

Required knowledge includes:

- end users of motorsport data and their needs
- manual and electronic data collection and logging methods and techniques, including the production and use of worksheets and checklists
- types, characteristics, components, uses and limitations of data acquisition systems
- techniques for inspection and basic fault-finding of data acquisition systems
- procedures for reporting equipment faults and data irregularities
- preliminary data evaluation techniques
- manufacturer, component supplier and team guidelines regarding acceptable tolerance levels
- team policies and procedures, including quality requirements, and reporting and recording procedures related to collecting and logging data
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to collecting and logging motorsport data

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- apply team requirements, controlling body and category rules, and supplementary regulations
- observe and apply safety procedures and requirements including the use of personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly collect and log data using manual and electronic systems on a minimum of two (2) occasions, covering each of the following:
  - vehicle data
  - weather data
  - circuit data
  - driver/rider characteristics
- collect and log data within team quality and time line standards
- work effectively with others
- modify activities to cater for variations in workplace context and environment
- follow team data security and confidentiality procedures and processes at all times.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>a range of electronic systems and components</li> <li>specifications and work instructions</li> <li>relevant information, including manufacturer specifications.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work

**RANGE STATEMENT**

situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Motorsport data**

Motorsport data may include:

- vehicle data
- weather data
- circuit data
- driver/rider characteristics

**Manual data collection**

Manual data collection may include using:

- observation
- listening
- stop watches
- video cameras
- radar guns
- instrument telltales
- temperature tape or paint

**Electronic data acquisition system components**

Electronic data acquisition system components include:

- sensors and transducers
- electronic or dash loggers
- analysis software
- wiring looms or electrical connectors
- lap beacons
- communications and telemetry components

**Team policies and procedures**

Team policies and procedures may include:

- team requirements relating to data acquisition
- team procedures relating to the use of data acquisition systems and equipment
- task instructions, including worksheets, checklists and plans
- team procedures relating to reporting and communication
- team procedures relating to the use of tooling and equipment
- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes

<b>RANGE STATEMENT</b>	
	<p>of practice</p> <ul style="list-style-type: none"> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• data acquisition system</li> <li>• multimeters</li> <li>• calculators</li> <li>• mathematical tables</li> <li>• graphing and charting equipment</li> <li>• computers and manual data collection equipment</li> </ul>
<b>Information and documents</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures and standards related to: <ul style="list-style-type: none"> <li>• collecting and logging data</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents.</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• team insurance requirements</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical
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## AURMTA5003 Determine material suitability for competition vehicle components

### Modification History

Release	Comment
Release 1	<p>Replaces AURM542216A Determine material suitability for competition vehicle component construction</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to determine material suitability for competition vehicle component construction. It includes determining component performance specifications, researching component operating environment, establishing material specifications for component and testing material suitability.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involves the production of new components from a design or existing components from a new material</p> <p>Work requires individuals to demonstrate analytical and organisational ability, judgement and problem-solving skills in the management of competition vehicle construction</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
AURMTA3007	Conduct non-destructive testing
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish component performance specifications	<p>1.1.Regulatory body and category rules, supplementary regulations, component supplier specifications and team instructions are used to develop component specifications including design, quality, material, equipment and quantities</p> <p>1.2.Component operating function is confirmed</p> <p>1.3.Component operating environment is established</p> <p>1.4.Component performance specifications are prepared</p> <p>1.5.Workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work</p>
2. Establish material performance specifications	<p>2.1.Material operating function is confirmed</p> <p>2.2.Criteria to be used in the selection of material and in the evaluation of outcomes are identified and documented</p> <p>2.3.Benchmark specifications for material are accessed and interpreted</p> <p>2.4.Possible legal and safety impacts of the material chosen are considered and responded to in accordance with regulatory and team obligations and practices</p> <p>2.5.Material performance specifications are prepared and documented to industry and team standards</p>
3. Test material suitability against material performance specifications	<p>3.1.Material capable of undertaking the operating function are identified</p> <p>3.2.The proposed material is selected following the identification, consideration and evaluation of the full range of available and relevant options</p> <p>3.3.The selected option, including material choices and processes, is developed in detail and progressively validated against established criteria</p> <p>3.4.Material compatibility is confirmed</p> <p>3.5.Material is selected/constructed to component specifications</p> <p>3.6.Test material are listed against material performance specifications</p> <p>3.7.Material failure causes are identified</p> <p>3.8.Testing procedures and results are documented</p> <p>3.9.Recommendations for material usage are devised</p>

ELEMENT	PERFORMANCE CRITERIA
4. Test component suitability against component performance specifications	4.1.Component test procedures are determined 4.2.Component is tested against component performance specifications 4.3.Testing procedures and results are documented 4.4.Recommendations for component usage are devised

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- research, collect, organise and understand information related to the suitability of material for competition vehicle components including the technical, regulatory, environmental and safety requirements
- communicate ideas and information to enable clarification of requirements, coordination of work with supervisors and other workers and the reporting of work outcomes and resolution of problems
- plan and organise activities including the development of specifications, checklists and schedules and the coordination of appropriate persons, equipment, systems and material to avoid back-tracking, workflow interruptions or wastage
- work with others to foster the team by recognising dependencies and using cooperative approaches to optimise communication, workflow and productivity
- use mathematical ideas and techniques to correctly complete measurements, calculate technical specifications, calibrate and establish test equipment and evaluate test results against pre-established criteria
- create and apply systematic problem-solving techniques to anticipate problems, avoid reworking and avoid wastage
- use workplace technology related to the management of assembly and preparation including tooling, measuring devices, equipment, calculators and computers

#### Required knowledge

Required knowledge includes:

- regulatory body and category rules and component supplier specifications
- possible legal and safety impacts of material selection
- molecular structure of material
- physical properties of fabrication material and composites of this material
- chemical properties of fabrication material and composites of this material
- material treatment processes
- causes of fabrication material degradation
- mechanical properties of fabrication material and composites of this material
- appropriateness of testing procedures to material characteristics being sought
- material and component testing procedures, both:
  - destructive
  - non-destructive
- problem-solving techniques
- supervision of WHS requirements

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• record keeping methods</li><li>• associated WHS policies and procedures</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly determine material suitability for a minimum of two (2) competition vehicle components. At least one (1) component must be made from metal and one (1) from a composite material. Each of the following must be covered:
  - selection, development and recording of material and component performance specifications and evaluation criteria before undertaking component production and testing
  - selection, development and validation of component production methodology, processes and specifications
  - application of the component production specifications and testing against predetermined criteria
  - recording and reporting of outcomes
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.
- Access to competition vehicles and associated assembly tooling in real or simulated situations involving the

<b>EVIDENCE GUIDE</b>	
	<p>application of assembly techniques and to the related computing, operational and inventory support systems.</p> <ul style="list-style-type: none"> <li>• Access to material, testing equipment and fabrication equipment to confirm component appropriateness.</li> <li>• Access to real or simulated work areas, material, equipment and information on work specifications, customer requirements, organisational procedures, safety procedures and regulations and quality standards.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</li> <li>• Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>• Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.</li> </ul>

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Components include</b>	<p>Components include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• competition vehicle structural (e.g. brackets, braces, roll cages, and tubs/cockpits/hulls) and operating components (linkages, suspension components and drive train components)</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements include:</p> <ul style="list-style-type: none"> <li>• state/territory and federal legislation</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer specifications and local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	<p>Work is carried out in accordance with legislative obligations (including environmental requirements), manual handling procedures and team insurance requirements</p>
<b>Material</b>	<p>Material may include, but is not limited to:</p> <ul style="list-style-type: none"> <li>• metals (including alloys) and composite material (plastics, fibreglass/carbon/Kevlar based material) which may be single material or combination material</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include, but is not limited to:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• fabrication equipment</li> <li>• measuring devices</li> <li>• testing devices</li> <li>• tools for calibration of measuring and testing devices</li> <li>• computers and relevant software</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation, regulations and</p>

RANGE STATEMENT	
	enterprise policies and practices
<b>Information/ documents</b>	<p>Information/ documents may include:</p> <ul style="list-style-type: none"> <li>• regulatory body and category rules</li> <li>• trade/professional journals, reports and electronic sources of information</li> <li>• team procedures relating to documentation, reporting, testing, calibration and communication</li> <li>• component supplier specifications and assembly procedures</li> <li>• test equipment supplier specifications</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURMTA5008 Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles

### Modification History

Release	Comment
Release 1	Replaces AURM542103A Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to determine aerodynamic and vehicle dynamic requirements of competition vehicles, devise improvement strategies, apply changes and test results.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit includes terminology, principles and effects of the physics involved in resistance and motion.</p> <p>Work requires individuals to demonstrate analytical and organisational ability, judgement and problem-solving skills in the application of aerodynamic and vehicle dynamic principles and effects to competition vehicles</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
AURMTD4002	Prepare competition vehicle suspension
AURMTJ4001	Select and prepare tyres and wheels for motorsport applications
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine optimum tyre setting	<p>1.1. Controlling body rules, category rules, supplementary regulations, manufacturer/component supplier specifications and team requirements are used to identify setting requirements</p> <p>1.2. Regulations and specifications/tolerances are examined to determine competitive advantage (technical, psychological and/or promotional advantage)</p> <p>1.3. Workplace health and safety (WHS) requirements, including regulatory requirements and personal protection needs, are observed throughout the work</p> <p>1.4. Specifications are checked for required operating conditions and clarification of specifications is sought where required</p> <p>1.5. Tyre setting requirements are calculated/determined according to known factors</p> <p>1.6. The effects of selected tyre settings on overall vehicle performance are evaluated</p> <p>1.7. Anticipated performance improvement is quantified and optimum settings are documented</p>
2. Determine optimum steering and suspension settings	<p>2.1. Controlling body and category rules, supplementary regulations, component supplier specifications and team requirements are used to establish settings</p> <p>2.2. Regulations and specifications/tolerances are examined to determine competitive advantage (technical, psychological and/or promotional advantage)</p> <p>2.3. Specifications are checked for required operating conditions and clarification of specifications is sought where required</p> <p>2.4. Steering and suspension setting requirements are calculated/determined according to known factors</p> <p>2.5. The effects of selected steering and suspension settings on overall vehicle performance are evaluated</p> <p>2.6. Anticipated performance improvement is quantified and optimum settings are documented</p>
3. Determine optimum aerodynamic device settings	<p>3.1. Controlling body rules, category rules, supplementary regulations, component supplier specifications and team requirements are used to establish settings</p> <p>3.2. Regulations and specifications/tolerances are</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>examined for competitive advantage (technical, psychological and/or promotional advantage)</p> <p>3.3. Specifications are checked for required operating conditions and clarification of specifications is sought where required</p> <p>3.4. Aerodynamic device setting requirements are calculated/determined according to known factors</p> <p>3.5. The effects of selected aerodynamic device settings on overall vehicle performance are evaluated</p> <p>3.6. Anticipated performance improvement is quantified and optimum settings are documented</p>
<p>4. Supervise the configuration of aerodynamic and vehicle dynamic settings</p>	<p>4.1. Tooling and equipment are checked for safe and effective operation</p> <p>4.2. The configuration of aerodynamic and vehicle dynamic settings is supervised</p> <p>4.3. During and after configuration, checks are made to ensure accurate and complete changes</p> <p>4.4. Problems with the work area or the operation of equipment are evaluated and decisions implemented</p> <p>4.5. Proposals for modifications or adaptation of equipment/components are evaluated and implemented</p> <p>4.6. Work area cleanliness and layout for job requirements is monitored</p>
<p>5. Test aerodynamic and vehicle dynamic settings</p>	<p>5.1. Test procedures are determined</p> <p>5.2. Settings are tested against anticipated performance improvement</p> <p>5.3. Testing procedure and results are documented</p> <p>5.4. Recommendations for settings usage are devised and implemented</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- research, collect, organise and understand information related to the application of aerodynamic and vehicle dynamic principles and effects to competition vehicles, including the technical, regulatory, environmental and safety requirements
- communicate ideas and information to enable clarification of requirements, coordination of work with supervisors and other workers and the reporting of work outcomes and problems
- plan and organise activities including the preparation and layout of the work area and the coordination of equipment, systems and material to avoid backtracking, workflow interruptions or wastage
- work with others to foster the team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete measurements and calculations required during the application of aerodynamic and vehicle dynamic principles and effects to competition vehicles
- create and apply systematic problem-solving techniques to anticipate problems, avoid reworking and avoid wastage
- use workplace technology related to determining requirements for the application of aerodynamic and vehicle dynamic principles and effects to competition vehicles including tooling, measuring devices, equipment, calculators and computers

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations relating to establishing settings
- terminology, principles and effects of the physics involved in resistance and motion
- manufacturer/component supplier specifications and team instructions relating to establishing settings
- aerodynamic and vehicle dynamic principles and their effects on competition vehicles
- competition vehicle test methods and procedures, including record keeping methods
- mathematical computations to determine optimum settings
- team guidelines regarding acceptable tolerance levels
- WHS policies and procedures



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> <li>interpret and apply team requirements, controlling body and category rules and supplementary regulations</li> <li>apply safety requirements, including the use of personal protective equipment</li> <li>follow task instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>minimise the risk of injury to self or others</li> <li>prevent damage to competition vehicle or equipment</li> <li>achieve required outcomes within team time and quality standards</li> </ul> </li> <li>correctly determine and supervise the configuration of optimum aerodynamic and vehicle dynamic settings on a minimum of two (2) occasions. Each of the following must be covered: <ul style="list-style-type: none"> <li>tyre settings</li> <li>steering and suspension settings</li> <li>aerodynamic device settings</li> </ul> </li> <li>select and correctly conduct test procedures</li> <li>document test results and compare to anticipated performance improvements</li> <li>manage time efficiently</li> <li>work effectively with others</li> <li>modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.</li> <li>Assessment of this competence may include project-related tasks and require portfolios or other forms of indirect evidence of process.</li> <li>Direct evidence will include endorsement of final outcome/product by team management or authorisation</li> </ul>

<b>EVIDENCE GUIDE</b>	
	<p>for use by a competent authority.</p> <ul style="list-style-type: none"> <li>• Access to competition vehicles and associated assembly tooling in real or simulated situations involving the application of repair/modification techniques and the related computing, operational and inventory support systems.</li> <li>• Access to real or simulated work areas, material, equipment and information on work specifications, team requirements, organisational procedures, safety procedures and regulations, and quality standards.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</li> <li>• Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>• Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>WHS requirements</b>	<p>WHS requirements include:</p> <ul style="list-style-type: none"> <li>• state/territory and federal legislation,</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer specifications and local safe</li> </ul>

<b>RANGE STATEMENT</b>	
	operating procedures
<b>Legislative requirements</b>	Work is carried out in accordance with legislative obligations (including environmental requirements), health regulations, manual handling procedures and team insurance requirements
<b>Tyre settings</b>	<p>Tyre settings include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• construction and compound</li> <li>• size (including stagger)</li> <li>• pressures</li> <li>• loadings</li> <li>• temperatures</li> </ul>
<b>Steering and suspension settings</b>	<p>Steering and suspension settings include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• wheel rate and linkage/leverage ratios</li> <li>• spring rate and spring pre-load</li> <li>• vehicle weight, sprung and unsprung weight</li> <li>• anti-roll bar rate (where fitted)</li> <li>• steering angles including toe-in/out, camber and caster</li> <li>• roll centres</li> <li>• ride height</li> <li>• centre of gravity</li> </ul>
<b>Aerodynamic settings</b>	<p>Aerodynamic settings include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• wing angles, height and location</li> <li>• body panels and fittings</li> <li>• ground effects/ride height</li> <li>• frontal areas</li> <li>• lift reduction/drag reduction</li> <li>• downforce generation</li> <li>• downforce/drag compromise</li> </ul>
<b>Known factors for determining suspension requirements</b>	<p>Known factors for determining suspension requirements include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulatory constraints</li> <li>• budgetary constraints</li> <li>• load and speed characteristics</li> <li>• terrain and climate conditions</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• driver/rider preferences</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment must include component supplier specified tooling and may include, but is not limited to:</p> <ul style="list-style-type: none"> <li>• jacking equipment</li> <li>• measuring devices</li> <li>• tyre pressure and temperature gauges</li> <li>• hand tooling</li> <li>• calculators, computers and data acquisition systems</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation, regulations and team policies and practices</p>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures relating to applying aerodynamic and vehicle dynamic principles and effects to competition vehicles</li> <li>• task instructions, including worksheets, checklists, plans, drawings and designs</li> <li>• team procedures relating to reporting and communication</li> <li>• team procedures relating to the use of tooling and equipment</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• motorsport/performance enhancement industry publications related to aerodynamic and vehicle dynamic principles</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURMTD4001 Test suspension dampers using a dynamometer

### Modification History

Release	Comment
Release 1	Replaces AURM442076B Test suspension dampers using a dynamometer  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to test suspension dampers using a dynamometer.</p> <p>It requires the technical ability to use a dynamometer to test suspension dampers and to analyse and interpret test results in order to maximise damper performance in the motorsport and performance enhancement environments.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who set up, conduct dynamometer tests on suspension damper performance and log, analyse and report the test data in order to maximise damper performance in motorsport and performance enhancement environments.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for dynamometer operation	<p>1.1. Use team instructions, category regulations and component supplier specifications are used to specify job requirements, including design, quality, materials, equipment and specifications</p> <p>1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work</p> <p>1.3. Check dynamometer for calibration and serviceability and prepare for operation</p>
2. Conduct dynamometer testing	<p>2.1. Determine appropriate load and run sequence and test parameters</p> <p>2.2. Connect dampers to dynamometer and confirm security of connections</p> <p>2.3. Perform the selected dynamometer testing sequence in accordance with technical specifications and directions and/or the locally authorised method</p> <p>2.4. Analyse dynamometer test data and make valid conclusions about damper condition and performance</p> <p>2.5. Report findings, including recommendations for damper configuration and/or modifications to improve performance based on dynamometer data, to appropriate persons</p> <p>2.6. Test damper modifications with confirmation runs</p> <p>2.7. Present data to team members to complement suspension set-up</p>
3. Clean up work area and log test results	<p>3.1. Perform dynamometer shutdown procedure in accordance with manufacturer requirements</p> <p>3.2. Disconnect dampers from dynamometer</p> <p>3.3. Clean and refurbish dynamometer and associated tooling and equipment</p> <p>3.4. Conduct operator maintenance of dynamometer</p> <p>3.5. Log dynamometer test results to create/add to damper history</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to dynamometers, including associated software and hardware, tooling, equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information to enable confirmation of work requirements, coordination of work with technical supervisors, other technicians and team members, and to report work outcomes and problems
- literacy skills to the level required to collect, organise, understand and analyse information related to dynamometer test results, team requirements and safety procedures
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurement of suspension damper performance required for the team
- problem-solving skills to the level required to use pre-checking and inspection techniques to anticipate test problems in order to work efficiently and effectively
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area, and the obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- suspension damper and dynamometer terminology
- preparation procedure for dynamometer testing
- dynamometer operation and use of associated hardware and software
- test environment correction factors
- dynamometer data interpretation and analysis
- damper modification and adjustment procedures
- operator dynamometer maintenance
- procedures for reporting task completion
- metric and imperial units of measurement
- WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to

**REQUIRED SKILLS AND KNOWLEDGE**

testing suspension dampers using a dynamometer

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly set up and operate a damper dynamometer to test a minimum of two (2) different dampers, with each being a different type or brand, to complete the following:
  - determine damper performance
  - analyse damper performance data
  - assess effect of damper changes and present to team members as information to complement suspension set-up
  - confirm effectiveness of damper set-up modifications
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and

<b>EVIDENCE GUIDE</b>	
	<p>disability.</p> <ul style="list-style-type: none"> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• suspension dampers</li> <li>• access to tooling and equipment</li> <li>• dynamometer and test equipment</li> <li>• technical references or information.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Test parameters</b>	<p>Test parameters may include:</p> <ul style="list-style-type: none"> <li>• ambient and damper temperature</li> <li>• damper stroke and frequency</li> <li>• sample rates</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing and other equipment</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• team insurance requirements</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer/component supplier specifications</li> <li>• local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>

**RANGE STATEMENT****Tooling and equipment**

Tooling and equipment may include:

- damper dynamometer
- hand and power tooling
- diagnostic computer hardware and software

**Information and procedures**

Information and procedures may include:

- controlling body rules, category rules and supplementary regulations
- event scheduling and location details
- team procedures and standards related to:
  - testing suspension dampers using a dynamometer
  - reporting and communication
  - use of tooling and equipment
  - emergency service contacts and team persons emergency contacts
  - team emergency and event procedures for accidents or injury
- work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists
- manufacturer/component supplier specifications and application procedures for test equipment and material
- Australian Design Rules (where applicable)
- safety body publications
- environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURMTD4002 Prepare competition vehicle suspension

### Modification History

Release	Comment
Release 1	Replaces AURM441749B Prepare competition vehicle suspension Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to test, dismantle, inspect, reassemble and adjust the suspension of a competition vehicle.</p> <p>It requires the technical ability to determine competition vehicle suspension requirements and the effects of making changes to variables.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who test, dismantle, inspect, reassemble and adjust the suspension of a competition vehicle in the motorsport environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
AURLTD3005	Repair suspension systems (light vehicle)
AURTTD2004	Inspect and service suspension systems

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine competition vehicle suspension requirements	<p>1.1. Use controlling body and category rules, supplementary regulations, component supplier specifications and team instructions to specify task requirements, including design, quality, material, equipment and quantities</p> <p>1.2. Examine regulations, specifications and tolerances for competitive advantage</p> <p>1.3. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work</p> <p>1.4. Check specifications for required operating conditions and seek clarification, where required</p> <p>1.5. Calculate suspension requirements according to known factors</p> <p>1.6. List component requirements and communicate to appropriate persons</p>
2. Prepare for work on suspension	<p>2.1. Check tooling and equipment for safe and effective operation</p> <p>2.2. Clean and lay out work area for job requirements</p> <p>2.3. Clean vehicle and prepare for initial measurement</p> <p>2.4. Measure existing suspension settings and document prior to component removal or adjustment</p> <p>2.5. Report problems with the work area or the operation of the equipment to appropriate persons</p>
3. Dismantle, repair/modify and assemble dampers	<p>3.1. Identify methods for removing and dismantling dampers according to team procedures and manuals/specifications</p> <p>3.2. Test, dismantle and clean dampers and check tolerances/wear against manufacturer specifications</p> <p>3.3. Inspect components for functioning and quality</p> <p>3.4. Make decision to retain, replace, repair, adjust or service component according to team policies and procedures</p> <p>3.5. Carry out repairs/modifications to dampers in accordance with manufacturer specifications for methods, equipment and tolerances</p> <p>3.6. Re-oil, bleed, bench test and re-gas (if required) dampers</p>
4. Dismantle, replace	<p>4.1. Identify methods for removing and dismantling</p>

ELEMENT	PERFORMANCE CRITERIA
and/or change springs	<p>springs according to team procedures and manuals/specifications</p> <p>4.2.Document dimensions before disassembly</p> <p>4.3.Disassemble and clean springs and check rates/tolerances against specifications and retain or replace according to team policies and procedures</p> <p>4.4.Test replacement springs for rate and wear</p>
5. Configure suspension components/settings	<p>5.1.Inspect removed suspension components quality and readiness for installation</p> <p>5.2.Use installation sequence and techniques</p> <p>5.3.Install sub-assemblies and tension fasteners to manufacturer/component supplier specifications</p> <p>5.4.Check to ensure accurate and complete fitting during and after installation</p> <p>5.5.Inspect associated components, sub-assemblies or structural elements of vehicles that may affect suspension configuration for serviceability and repair, where necessary</p> <p>5.6.Configure suspension components/settings within tolerances</p>
6. Configure suspension components/settings	<p>6.1.Document settings in accordance with team procedures</p> <p>6.2.Report problems with sub-assemblies to appropriate persons</p>
7. Clean up work area and complete record keeping	<p>7.1.Maintain tooling, as required, and return to storage</p> <p>7.2.Tag and shelve/store surplus components/consumables</p> <p>7.3.Remove surplus material from work area</p> <p>7.4.Clean up spillage from work area and vehicle</p> <p>7.5.Complete team/component supplier documentation</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to determining requirements for the preparation of competition vehicle suspension, including tooling, measuring devices, equipment, calculators and computers
- communication skills to the level required to communicate ideas and information to enable clarification of requirements, coordination of work with supervisors and other workers, and to report work outcomes and problems
- literacy skills to the level required to collect, organise and understand information related to preparing competition vehicle suspension, including team requirements, manufacturer specifications, plans and safety procedures
- numeracy skills to the level required to use mathematical ideas and techniques to complete measurements and calculations required during the preparation of competition vehicle suspension
- problem-solving skills to the level required to use pre-checking and inspection techniques to anticipate assembly problems in order to work efficiently and effectively
- team skills to the level required to work with others to foster the team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area, and the coordination of equipment, systems and materials to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- team requirements/job specifications, supplementary regulations and component supplier specifications
- competition vehicle suspension component types, function, applications, limitations and configuration considerations
- suspension-related calculations
- safety in relation to repair of suspension components and assemblies
- damper disassembly, inspection, repair/modification, assembly, re-oiling, bleeding, re-gassing and bench testing techniques, suspension components/settings configuration
- record keeping techniques
- procedures for reporting equipment faults and component defects
- workplace guidelines regarding acceptable tolerance levels

**REQUIRED SKILLS AND KNOWLEDGE**

- WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to complex fuel systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly prepare suspension on a minimum of two (2) competition vehicles in situations involving each of the following:
  - calculations to determine spring rate and spring pre-load
  - determination of component selection within constraints of known factors
  - configuration of dampers and springs
  - adjustment of suspension components/settings
- work effectively with others
- modify activities to cater for variations in workplace context and environment and within tolerances.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and

**EVIDENCE GUIDE**

	<p>disability.</p> <ul style="list-style-type: none"> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• access to competition vehicles</li> <li>• associated assembly tooling</li> <li>• computing, operational and inventory support systems</li> <li>• materials and equipment</li> <li>• information on work specifications</li> <li>• team requirements</li> <li>• organisational procedures</li> <li>• safety procedures and regulations</li> <li>• quality standards.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Competition vehicle suspension components**

Competition vehicle suspension components may include:

- springs
- dampers
- suspension/swing arms/joints
- pivot locations/pickup points
- lateral control devices
- travel limiters
- anti-roll bars
- weight jackers

**Dismantling, repair/modification and assembly of dampers**

Dismantling, repair/modification and assembly of dampers applies only to:

- non-sealed dampers (manufacturer/component supplier safety recommendations must be observed at all times)

**Factors and calculations for determining suspension requirements**

Factors for determining suspension requirements may include:

- regulatory constraints
- team budgetary constraints
- load and speed characteristics
- terrain and climate conditions
- driver/rider preferences

When determining suspension requirements calculations may include:

- wheel rate
- spring rate
- linkage and leverage ratios
- spring pre-load
- vehicle weight
- sprung and unsprung weight
- anti-roll bar rate

Determinations can be confirmed through the use

<b>RANGE STATEMENT</b>	
	of: <ul style="list-style-type: none"> <li>• shock dynamometer testing</li> <li>• track testing and data analysis</li> <li>• software simulation</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include: <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• team insurance requirements</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer/component supplier specifications</li> <li>• local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include: <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• component supplier specified tooling</li> <li>• jacking equipment</li> <li>• measuring devices</li> <li>• hand tooling</li> <li>• calculators</li> <li>• computers</li> <li>• data acquisition systems</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to: <ul style="list-style-type: none"> <li>• preparing competition vehicle suspension</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> </ul> </li> <li>• team emergency and event procedures for accidents or injury</li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURMTE4001 Test engines using a dynamometer

### Modification History

Release	Comment
Release 1	Replaces AURM441976B Test engines using a dynamometer Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to test engines using a dynamometer.</p> <p>It requires the technical ability to use a dynamometer to test engine performance and to analyse and interpret test results in order to maximise engine performance in the motorsport and performance enhancement environments.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who set up, conduct dynamometer tests on engines and log, analyse and report the test data in order to maximise engine performance in motorsport and performance enhancement environments.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for dynamometer operation	<p>1.1. Use team instructions, controlling body rules, category rules and component supplier specifications to specify job requirements, including design, quality, materials, equipment and specifications</p> <p>1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, extraction, fire hazard, fuel storage, scatter shields, noise regulations, environmental regulations and personal protection needs, throughout the work</p> <p>1.3. Check dynamometer for calibration and serviceability and prepare for operation</p> <p>1.4. Connect engine to dynamometer, including ancillary systems and monitoring/control systems</p> <p>1.5. Connect exhaust extraction and check for serviceability</p> <p>1.6. Prepare engine for dynamometer testing, including checking oil and water levels, and confirm engine tune and condition</p>
2. Conduct dynamometer testing	<p>2.1. Identify load and run sequence, including run-in period for new engines</p> <p>2.2. Calculate correction factors and apply to results</p> <p>2.3. Check engine connections to the dynamometer</p> <p>2.4. Perform selected dynamometer testing sequence in accordance with technical specifications and directions and/or the locally authorised method</p> <p>2.5. Analyse dynamometer test data and make valid conclusions about engine and sub-system condition and performance</p> <p>2.6. Report findings, including recommendations for engine configuration and/or modifications to improve performance based on dynamometer data, to appropriate persons</p> <p>2.7. Test approved modifications with confirmation runs</p> <p>2.8. Present data to team members as information to complement engine/vehicle set-up</p>
3. Clean up work area and log test results	<p>3.1. Perform dynamometer shutdown procedure in accordance with manufacturer/component supplier requirements</p> <p>3.2. Disconnect engine from dynamometer</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3.Clean and refurbish dynamometer and associated tooling and equipment</p> <p>3.4.Conduct operator maintenance of dynamometer</p> <p>3.5.Log dynamometer test results to create/add to engine history</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to dynamometers, including tooling, equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information to enable confirmation of work requirements, coordination of work with technical supervisors, other technicians and team members, and to report work outcomes and problems
- literacy skills to the level required to collect, organise, understand and analyse information related to dynamometer test results, team requirements and safety procedures
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurement of engine performance required for the team
- problem-solving skills to the level required to use dynamometer testing to solve problems with engine performance
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area, and the obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- engine performance and dynamometer terminology
- preparation procedure for dynamometer testing
- dynamometer operation and use of associated hardware and software
- test environment correction factors
- dynamometer data interpretation and analysis
- operator dynamometer maintenance
- procedures for reporting task completion
- metric and imperial units of measurement
- WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to testing engines using a dynamometer

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly set up and operate an engine dynamometer to test a minimum of two (2) engines to complete the following:
  - determine engine performance
  - analyse engine performance data
  - assess effect of engine and sub-system modifications and present to team members as information to complement engine/vehicle set-up
  - confirm effectiveness of engine and sub-system modifications
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to

**EVIDENCE GUIDE**

	<p>accommodate ethnicity, age, gender, demographics and disability.</p> <ul style="list-style-type: none"> <li>The following resources should be made available: <ul style="list-style-type: none"> <li>access to tooling and equipment</li> <li>engines</li> <li>dynamometer and test equipment</li> <li>technical references or information.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

**RANGE STATEMENT**

regional contexts) may also be included.

**Dynamometers**

Dynamometers may include:

- engine and chassis dynamometers
- water loaded dynamometers
- electrically loaded dynamometers

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing, including closed-in shoes, long trousers, handling gloves and other equipment
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements
- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• engine dynamometer</li> <li>• chassis dynamometer</li> <li>• hand and power tooling</li> <li>• engine compression test kit</li> <li>• vacuum/pressure gauges</li> <li>• flow meters</li> <li>• exhaust analysers</li> <li>• engine diagnostic computer hardware and software</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to: <ul style="list-style-type: none"> <li>• testing engines using a dynamometer</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## **AURMTF4001 Analyse and repair complex performance carburetted fuel systems**

### **Modification History**

<b>Release</b>	<b>Comment</b>
<b>Release 1</b>	Replaces AURM441394A Analyse and repair complex performance carburetted fuel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Changes to pre-requisite units

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to inspect, analyse and repair carburetted fuel systems, associated components and refuelling equipment.</p> <p>It requires the technical ability to conduct and interpret tests, determine repair and/or performance improvement strategies and conduct repairs, adjustments and post-repair checks.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who analyse faults and implement performance improvement strategies in carburetted fuel systems, associated components and refuelling equipment in the motorsport and performance enhancement environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>	
AURTTTF2001	Service petrol fuel systems
AURTTTF3006	Diagnose and repair petrol carburettor systems

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the faults	1.1. Use controlling body rules, category rules, supplementary regulations and team requirements to specify task requirements, including configuration, equipment, quality and quantities 1.2. Access and interpret benchmark specifications for a correctly functioning fuel system 1.3. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work 1.4. Examine the details of the fault and document available preliminary information 1.5. Identify the effects of the fault and confirm from direct and/or indirect evidence 1.6. Respond to possible safety impacts of the fault in accordance with regulatory and team obligations and practices
2. Prepare for fault analysis	2.1. Identify possible causes of the fault, including intermittent faults, from an analysis of technical support information and available onboard diagnostic systems 2.2. Develop the most appropriate analysis process, including sequence, tests and testing equipment, and select from the range of available options 2.3. Obtain test equipment and prepare for the application in accordance with regulatory, manufacturer and team requirements 2.4. Select and prepare tooling and materials required to support the diagnostic process
3. Analyse the faults and determine repair/performance enhancement strategies	3.1. Follow the selected analysis process in accordance with technical specifications and directions and/or the locally authorised method 3.2. Conduct test using testing equipment in accordance with regulatory requirements and manufacturer/component supplier specifications 3.3. Verify test results and other diagnostic findings, if necessary, and use reliable alternative or optional processes 3.4. Obtain authority to partly dismantle components, to permit an accurate inspection of analysed faults, if required

ELEMENT	PERFORMANCE CRITERIA
	<p>3.5. Draw valid conclusions about the cause, and draw the direct and indirect consequences of the fault from available evidence and document to team requirements</p> <p>3.6. Research technical support information to identify options for rectifying the fault or enhancing performance</p> <p>3.7. Select the most appropriate option from an analysis of the options, the prevailing circumstances, regulatory requirements and team policies</p> <p>3.8. Document and communicate the selected repairs/modifications or adaptation of equipment to appropriate persons, including the analysis outcome and repair requirements</p>
4. Conduct repairs/implement performance improvement strategies	<p>4.1. Carry out repairs and adjustments to components/sub-assemblies in accordance with manufacturer/component supplier specifications for methods, equipment used and tolerances relative to the system</p> <p>4.2. Conduct post-repair checks and vehicle start-up</p>
5. Clean up work area and finalise documentation	<p>5.1. Clean, maintain and prepare equipment and tooling for future use and store in accordance with manufacturer/component supplier specifications and team requirements</p> <p>5.2. Remove surplus and unserviceable components in accordance with team procedures</p> <p>5.3. Report problems with the work area or the operation of the equipment to appropriate persons</p> <p>5.4. Record work/vehicle documentation</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to carburetted fuel systems, including tooling equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information to enable confirmation of work requirements, coordination of work with technical supervisors, other technicians and workers, and reporting of work outcomes and problems
- literacy skills to the level required to collect, organise and understand information related to the analysis and repair of carburetted fuel, including technical, regulatory, environmental and safety requirements
- numeracy skills to the level required to use mathematical ideas and techniques to correctly interpret test results in order to determine required action for the maintenance of carburetted fuel systems
- problem-solving skills to the level required to use pre-checking and inspection techniques to anticipate maintenance and repair problems, avoid reworking and avoid wastage
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area and obtaining equipment and material, to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- types, function, operations and limitations of carburetted fuel systems and components
- properties of fuels used in the motorsport industry, including compatibility with carburetted fuel systems components
- carburetted fuel systems layouts
- diagnosis and testing procedures, and test instrument application
- symptom and cause differentiation
- repair and/or performance improvement strategies
- removal, replacement and repair, adjustment and post-repair check procedures
- diagnosis theory, including concept, design and planning
- record keeping procedures, including procedures for reporting equipment faults and

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<p>component defects</p> <ul style="list-style-type: none"><li>• team guidelines regarding acceptable quality and tolerance levels</li><li>• equipment safety requirements</li><li>• WHS policies and procedures</li><li>• applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to systems</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply safety requirements, including the isolation of equipment and the use of personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly analyse, repair and conduct post-repair checks on a minimum of three (3) performance carburetted system faults, involving:
  - rough running, under/over fuelling, misfiring, poor performance, contamination or leaks, with:
    - at least one fault having a possible combination of causes involved in the sub-systems (e.g. fuel cells, pumps, pressure and/or flow regulation, management/control system and injection)
    - the scope of the faults necessitates the use of a range of testing equipment
- work effectively with others.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and

**EVIDENCE GUIDE**

	<p>disability.</p> <ul style="list-style-type: none"> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• access to competition vehicles carburetted systems and associated test instruments</li> <li>• material and equipment</li> <li>• information on work specifications</li> <li>• team requirements</li> <li>• organisational procedures</li> <li>• safety procedures, regulations and quality standards.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

**RANGE STATEMENT**

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Carburetted fuel system**

A performance carburetted fuel system is defined as a specialised motorsport/performance system incorporating an adjustable fuel supply system, and may include:

- a duplicate/backup supply system
- single or multiple carburettor systems

**Fuel systems**

Fuel systems, including sub-systems and components, may include:

- fuel cells
- pumps
- pressure and/or flow regulation
- management/control system
- multiple carburetion components

**Diagnosis**

Diagnosis includes covering:

- module and parts replacement in related electrical, electronic and pneumatic control systems

**Fuel system faults**

Fuel system faults may include:

- rough running
- under/over fuelling
- misfiring
- poor performance
- contamination
- leakage
- indirect faults caused by the influence of external systems which may or may not be faulty in their primary operation

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and

<b>RANGE STATEMENT</b>	
	substances <ul style="list-style-type: none"> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• team insurance requirements</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer/component supplier specifications</li> <li>• local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include: <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand and power tooling</li> <li>• vacuum/pressure gauges</li> <li>• flow meters</li> <li>• exhaust analysers</li> <li>• multimeters</li> <li>• engine diagnostic computer hardware and software</li> </ul>
<b>Components</b>	Components may include: <ul style="list-style-type: none"> <li>• rollover valves</li> <li>• fuel cells</li> <li>• fuel lines</li> <li>• breathers</li> <li>• pickup pumps</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• main pumps</li> <li>• filters</li> <li>• fuel pots/surge tanks/collector tanks</li> <li>• pressure and temperature sensors</li> <li>• carburettors</li> <li>• hoses and fittings</li> <li>• refuelling equipment, including churns/rigs, dry break valves, hoses and fittings</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to:             <ul style="list-style-type: none"> <li>• diagnosing and maintaining fuel systems</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Fuel Systems
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## AURMTF4002 Analyse and repair performance fuel injection systems

### Modification History

Release	Comment
Release 1	Replaces AURM441395A Analyse and repair performance fuel injection systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to inspect, analyse and repair fuel injection systems, associated components and refuelling equipment.</p> <p>It requires the technical ability to conduct and interpret tests, determine repair and/or performance improvement strategies and conduct repairs, adjustments and post-repair checks.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who analyse faults and implement performance improvement strategies in fuel injection systems, associated components and refuelling equipment in the motorsport and performance enhancement environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
AURTTF2001	Service petrol fuel systems
AURETR3023	Diagnose and repair electronic spark ignition engine management systems

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm faults	<p>1.1. Use controlling body rules, category rules, supplementary regulations and team requirements to specify task requirements, including configuration, equipment, quality and quantities</p> <p>1.2. Access and interpret benchmark specifications for a correctly functioning fuel system</p> <p>1.3. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work</p> <p>1.4. Examine the details of the fault and document available preliminary information</p> <p>1.5. Identify the effects of the fault and confirm from direct and/or indirect evidence</p> <p>1.6. Respond to possible safety impacts of the fault in accordance with regulatory and team obligations and practices</p>
2. Prepare for fault analysis	<p>2.1. Identify possible causes of the fault, including intermittent faults from an analysis of technical support information and available onboard diagnostic systems</p> <p>2.2. Develop the most appropriate analysis process, including sequence, tests and testing equipment, and select from the range of available options</p> <p>2.3. Obtain test equipment and prepare for the application in accordance with regulatory, manufacturer and team requirements</p> <p>2.4. Select and prepare tooling and materials required to support the diagnostic process</p>
3. Analyse faults and determine repair/performance enhancement strategies	<p>3.1. Follow the selected analysis process in accordance with technical specifications and directions and/or the locally authorised method</p> <p>3.2. Conduct test using testing equipment in accordance with regulatory requirements and manufacturer/component supplier specifications</p> <p>3.3. Verify test results and other diagnostic findings, if necessary, and use reliable alternative or optional processes</p> <p>3.4. Obtain authority to partly dismantle components, to permit an accurate inspection of analysed faults, if required</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.5. Draw valid conclusions about the cause, and draw the direct and indirect consequences of the fault from available evidence and document to team requirements</p> <p>3.6. Research technical support information to identify options for rectifying the fault or enhancing performance</p> <p>3.7. Select the most appropriate option from an analysis of the options, the prevailing circumstances, regulatory requirements and team policies</p> <p>3.8. Document and communicate the selected repairs/modifications or adaptation of equipment to appropriate persons, including the analysis outcome and repair requirements</p>
4. Conduct repairs/implement performance improvement strategies	<p>4.1. Carry out repairs and adjustments to components/sub-assemblies in accordance with manufacturer/component supplier specifications for methods, equipment used and tolerances relative to the system</p> <p>4.2. Conduct post-repair checks and vehicle start-up</p>
5. Clean up work area and finalise documentation	<p>5.1. Clean, maintain and prepare equipment and tooling for future use and store in accordance with manufacturer/component supplier specifications and team requirements</p> <p>5.2. Remove surplus and unserviceable components in accordance with team procedures</p> <p>5.3. Report problems with the work area or the operation of the equipment to appropriate persons</p> <p>5.4. Record work/vehicle documentation</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to fuel injection systems, including tooling equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information to enable confirmation of work requirements, coordination of work with technical supervisors, other technicians and workers, and reporting of work outcomes and problems
- literacy skills to the level required to collect, organise and understand information related to the analysis and repair of fuel injection system analysis, including technical, regulatory, environmental and safety requirements
- numeracy skills to the level required to use mathematical ideas and techniques to correctly interpret test results in order to determine required action for the maintenance of fuel systems
- problem-solving skills to the level required to use pre-checking and inspection techniques to anticipate maintenance and repair problems, avoid reworking and avoid wastage
- team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area, and obtaining equipment and material, to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- types, function, operations and limitations of fuel injection systems and components
- properties of fuels used in the motorsport industry, including compatibility with fuel injection system components
- fuel injection systems layouts
- diagnosis and testing procedures, and test instrument application
- symptom and cause differentiation
- repair and/or performance improvement strategies
- removal, replacement and repair, adjustment and post-repair check procedures
- diagnosis theory, including concept, design and planning
- record keeping procedures, including procedures for reporting equipment faults and component defects

**REQUIRED SKILLS AND KNOWLEDGE**

- team guidelines regarding acceptable quality and tolerance levels
- equipment safety requirements
- WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to fuel injection systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply safety requirements, including the isolation of equipment and the use of personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly analyse, repair and conduct post-repair checks on a minimum of three (3) fuel injection system faults involving:
  - rough running, under/over fuelling, misfiring, poor performance, contamination or leaks, with:
    - at least one fault having a possible combination causes involved in the sub-systems (e.g. fuel cells, pumps, pressure and/or flow regulation, management/control system and injection
    - the scope of the faults necessitates the use of a range of testing equipment
- work effectively with others.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and

**EVIDENCE GUIDE**

	<p>disability.</p> <ul style="list-style-type: none"> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• access to competition vehicles fuel injection systems and associated test instruments</li> <li>• material and equipment</li> <li>• information on work specifications</li> <li>• team requirements</li> <li>• organisational procedures</li> <li>• safety procedures, regulations and quality standards.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

**RANGE STATEMENT**

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Fuel injected system**

A performance fuel injection system is defined as a specialised motorsport/performance system incorporating a configurable management/control system, and may include:

- a duplicate/backup supply system and injection

**Fuel systems**

Fuel systems, including sub-systems and components, may include:

- fuel cells
- pumps
- pressure and/or flow regulation
- management/control system and injection

**Diagnosis**

Diagnosis includes covering:

- module and parts replacement in related electrical, electronic and pneumatic control systems

**Fuel system faults**

Fuel system faults may include:

- rough running
- under/over fuelling
- misfiring
- poor performance
- contamination
- leakage
- indirect faults caused by the influence of external systems which may or may not be faulty in their primary operation

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li><li>• team insurance requirements</li><li>• material safety management systems</li><li>• controlling body requirements</li><li>• manufacturer/component supplier specifications</li><li>• local safe operating procedures</li></ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"><li>• award and enterprise agreements</li><li>• industrial relations</li><li>• Australian standards</li><li>• Australian Design Rules</li><li>• confidentiality and privacy</li><li>• WHS</li><li>• the environment</li><li>• equal opportunity</li><li>• anti-discrimination</li><li>• duty of care</li><li>• health regulations</li></ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"><li>• hand and power tooling</li><li>• vacuum/pressure gauges</li><li>• flow meters</li><li>• exhaust analysers</li><li>• multimeters</li><li>• engine diagnostic computer hardware and software</li></ul>
<b>Components</b>	<p>Components may include:</p> <ul style="list-style-type: none"><li>• rollover valves</li><li>• fuel cells</li><li>• fuel lines</li><li>• breathers</li><li>• pickup pumps</li><li>• main pumps</li></ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• filters</li> <li>• fuel pots/surge tanks/collector tanks</li> <li>• pressure and temperature sensors</li> <li>• injectors</li> <li>• hoses and fittings</li> <li>• refuelling equipment, including churns/rigs, dry break valves, hoses and fittings</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to: <ul style="list-style-type: none"> <li>• diagnosing and maintaining fuel systems</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> </ul> </li> <li>• team emergency and event procedures for accidents or injury</li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• Australian Design Rules (where applicable)</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Fuel Systems
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## AURMTJ4001 Select and prepare tyres and wheels for motorsport applications

### Modification History

Release	Comment
Release 1	Replaces AURM441868B Select and prepare tyres and wheels for motorsport applications Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to select and prepare tyres and wheels for motorsport applications to optimise handling performance.</p> <p>It requires the technical ability to select and prepare tyres and wheels for use on a competition vehicle, fit tyre and wheel assemblies, prepare pre-race tyre and wheels, document post-race tyre and wheel data and adjust, as required.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who select and prepare tyres and wheels used in motorsports to optimise handling performance. This includes mounting wheels, conducting pre-race preparation, and post-race maintenance stock control and storage procedures.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine and select competition vehicle tyres and wheels	1.1. Use controlling body and category rules, supplementary regulations, component supplier specifications and team instructions to specify task requirements, including design, quality, material, equipment and quantities 1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work 1.3. Use regulations and specifications/tolerances to identify a competitive advantage 1.4. Check specifications for required operating conditions and seek clarification of specifications, where required 1.5. Formulate tyre and wheel requirements according to known factors 1.6. Select tyre and wheel assemblies for application against requirements and document and report to appropriate persons
2. Prepare work area and equipment	2.1. Check tooling and equipment for safe and effective operation 2.2. Clean and lay out work area for job requirements 2.3. Report problems with the work area or the operation of equipment to appropriate persons
3. Mount tyre and wheel assembly to vehicle	3.1. Clean or treat mounting surfaces and threaded components and check for damage 3.2. Select tyre and wheel assemblies from stock according to markings (i.e. scrutineers/category officials or team markings) and check against criteria for an event 3.3. Inspect tyre and wheel assemblies for serviceability 3.4. Fit tyre and wheel assemblies using mounting sequence and techniques 3.5. Tension fasteners to team/component supplier specifications and engage fastener locking device, where fitted 3.6. Check during and after installation to ensure accurate and complete fitting 3.7. Report problems with tyre and wheel assemblies to appropriate persons

ELEMENT	PERFORMANCE CRITERIA
4. Conduct pre-race tyre and wheel preparation	<ul style="list-style-type: none"><li>4.1. Obtain recommended start/cold pressures and optimum operating/hot pressures</li><li>4.2. Set tyre inflation pressures to specifications</li><li>4.3. Measure and document baseline tyre temperature, ambient and traction surface temperatures</li><li>4.4. Buff tyres, if specified</li><li>4.5. Fit and turn on tyre warmers, if specified (and if allowed in category rules)</li></ul>
5. Conduct post-race tyre and wheel maintenance	<ul style="list-style-type: none"><li>5.1. Check tyre pressures and temperatures at specified times and document data</li><li>5.2. Read tyre contact surface for handling and wear indications and document data</li><li>5.3. Question driver/rider for assessment of handling characteristics and document data</li><li>5.4. Source additional data, as required, and identify changes (if any) required to tyres and wheels prior to next race</li><li>5.5. Clean tyre contact surfaces, as required</li><li>5.6. Change tyres to different compound or pattern, as required</li><li>5.7. Change tyre pressures, as required</li><li>5.8. Tag or mark removed tyres for data audit trail</li></ul>
6. Clean up and complete documentation	<ul style="list-style-type: none"><li>6.1. Pack and store tyres</li><li>6.2. Assess tyre and wheel stock inventory and document and report to appropriate persons</li><li>6.3. Maintain tooling and return to storage</li><li>6.4. Complete team/component supplier documentation</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to selecting and preparing tyres and wheels for motorsport applications, including tooling, equipment, calculators and measuring devices
- communication skills to the level required to communicate ideas and information to enable clarification of requirements, coordination of work with supervisors and other workers, and to report work outcomes and problems
- literacy skills to the level required to collect, organise and understand information related to selecting and preparing tyres and wheels for motorsport applications, team requirements, manufacturer/component supplier specifications and safety procedures
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during the selection and preparation of tyres and wheels for motorsport applications
- problem-solving skills to the level required to use pre-checking and inspection techniques to anticipate assembly problems in order to work efficiently and effectively
- team skills to the level required to work with others to foster the team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the worksite, and the coordination of equipment, systems and materials to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- controlling body rules, category rules and supplementary regulations, manufacturer/component supplier specifications (e.g. wheel size, application and pressures both cold and hot) and team requirements/job specifications
- wheel and tyre types, manufacturer/component supplier markings, function, application and limitations, including specifications, handling characteristics and manufacturer/component supplier recommendation for use
- tyre and wheel serviceability inspection techniques
- reading tyres for handling and wear indications
- driver/rider debriefing
- tyre temperature testing
- tyre measurement, including stagger calculations

**REQUIRED SKILLS AND KNOWLEDGE**

- tyre buffing, cleaning and warming
- tyre and wheel storage methods
- markings by scrutineers/category officials or team markings
- record keeping techniques
- procedures for reporting equipment faults and component defects
- WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to selecting and preparing tyres

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- correctly apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly prepare and fit tyres and wheels to a minimum of two (2) different vehicles in differing situations
- comply with tyre and wheel manufacturer/component supplier recommendations for use
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to competition vehicles
  - associated assembly tooling
  - related computing, operational and inventory support

**EVIDENCE GUIDE**

	<p>systems</p> <ul style="list-style-type: none"> <li>• work areas</li> <li>• material and equipment</li> <li>• information on work specifications</li> <li>• customer requirements</li> <li>• organisational procedures</li> <li>• safety procedures and regulations</li> <li>• quality standards.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work

**RANGE STATEMENT**

situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Inspection for serviceability**

Inspection for serviceability may include:

- checking wheel condition for damage or fatigue
- valve body/pressure relief valves
- ensuring inner surface of wheel is free from contaminants (e.g. oil/grease, water and dirt/gravel)
- checking tyre condition for signs of damage, excessive wear and flat spots

**Competitive advantage**

Competitive advantage may include:

- technical advantage
- psychological advantage
- promotional advantage

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing, including closed-in shoes, long trousers, handling gloves and other equipment
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements
- material safety management systems
- controlling body requirements
- manufacturer/component supplier specifications
- local safe operating procedures

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• pit lane/service area specified tooling</li> <li>• lifting devices</li> <li>• air tooling</li> <li>• torque wrenches</li> <li>• tyre hardness test instruments</li> <li>• air pressure gauges</li> <li>• tyre buffers and cleaners</li> <li>• tyre heaters</li> <li>• pyrometers</li> <li>• hand tooling</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to: <ul style="list-style-type: none"> <li>• selecting and preparing tyres and wheels for motorsport applications</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier</li> </ul>

**RANGE STATEMENT**

	<p>specifications and application procedures for test equipment and material</p> <ul style="list-style-type: none"><li>• Australian Design Rules (where applicable)</li><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Wheels and tyres
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## AURMTQ4001 Analyse and repair complex performance driveline systems

### Modification History

Release	Comment
Release 1	Replaces AURM441293B Analyse and repair complex performance driveline systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to analyse and repair complex performance transmissions, final drive and drivelines, including engine to transmission drive couplings.</p> <p>It requires the technical ability to test, identify repairs or performance enhancement strategies, and to conduct repairs, adjustments and post-repair checks to complex performance transmissions, final drive and drivelines.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who analyse faults and repair and implement performance improvement strategies in complex performance transmissions, final drive and drivelines in the motorsport and performance enhancement environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units	
AURLTQ3001	Repair final drive assemblies (light vehicle)
AURLTQ3002	Repair final drive - driveline (light vehicle)
AURLTX3001	Repair transmissions - manual (light vehicle)
AURMTA3007	Conduct non-destructive testing

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm faults	<p>1.1. Use controlling body rules, category rules, supplementary regulations and team requirements to specify task requirements, including configuration, equipment, quality and quantities</p> <p>1.2. Access and interpret benchmark specifications for a correctly functioning transmission/final drive/driveline</p> <p>1.3. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work</p> <p>1.4. Examine the details of the fault and document available preliminary information</p> <p>1.5. Identify the effects of the fault and confirm from direct and/or indirect evidence</p> <p>1.6. Identify and respond to possible safety impacts of the fault in accordance with regulatory and team obligations and practices</p>
2. Prepare for fault analysis	<p>2.1. Identify possible causes of the fault, including intermittent faults, from an analysis of technical support information and available onboard diagnostic systems</p> <p>2.2. Develop the most appropriate analysis process, including sequence, tests and testing equipment, and select from the range of available options</p> <p>2.3. Obtain test equipment and prepare for the application in accordance with regulatory, manufacturer and team requirements</p> <p>2.4. Select and prepare for use, tooling and materials required to support the diagnostic process</p> <p>2.5. Prepare complex performance driveline system components for the diagnostic process, including isolation and cleaning requirements</p>
3. Diagnose the fault and determine repair/performance enhancement strategies	<p>3.1. Undertake the selected analysis process in accordance with technical specifications and directions and/or the locally authorised method</p> <p>3.2. Apply test and use testing equipment in accordance with regulatory requirements and manufacturer/component supplier specifications</p> <p>3.3. Verify test results and other diagnostic findings, if necessary, by using reliable alternative or optional</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>processes</p> <p>3.4.Obtain authority to partly dismantle components, to permit an accurate inspection of analysed faults, if required</p> <p>3.5.Draw valid conclusions about the cause, and draw direct and indirect consequences of the fault from available evidence and document to team requirements</p> <p>3.6.Research technical support information and use to identify options for rectifying the fault or enhancing performance</p> <p>3.7.Select the most appropriate option from an analysis of the options, the prevailing circumstances, regulatory requirements and team policies</p> <p>3.8.Document and communicate the selected repairs/modifications or adaptation of equipment to appropriate persons, including the analysis outcome and repair requirements</p>
4. Conduct repairs/ implement performance improvement strategies	<p>4.1.Carry out repairs and adjustments to components/sub-assemblies in accordance with manufacturer/component supplier specifications for methods, equipment used and tolerances relative to the system</p> <p>4.2.Conduct post-repair checks and vehicle start-up</p>
5. Clean up work area and finalise documentation	<p>5.1.Clean, maintain and prepare equipment and tooling for future use and store in accordance with manufacturer/component supplier specifications and team requirements</p> <p>5.2.Remove surplus and unserviceable components in accordance with team procedures</p> <p>5.3.Report problems with the work area or the operation of the equipment to appropriate persons</p> <p>5.4.Record work/vehicle documentation</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the analysis and repair of complex performance driveline systems, including tooling, measuring devices, test instruments, workshop equipment, calculators and computers
- communication skills to the level required to communicate ideas and information to enable clarification of requirements, coordination of work with supervisors and other workers, and to report work outcomes and resolution of problems
- literacy skills to the level required to collect, organise and understand information related to the analysis and repair of complex performance driveline systems, including technical, regulatory, environmental and safety requirements
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during the analysis and repair of complex performance driveline systems
- problem-solving skills to the level required to create and apply systematic diagnostic and problem-solving techniques to anticipate problems, avoid reworking and avoid wastage
- team skills to the level required to work with others to foster the team by recognising dependencies and using cooperative approaches to optimise communication, workflow and productivity
- planning skills to the level required to plan and organise activities, including the preparation and layout of the work area, and the coordination of equipment, systems and material to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- types, function, operations and limitations of complex performance transmission, final drive and drivelines, including engine-transmission drive couplings, such as clutches and torque converters
- diagnosis and testing procedures, and test instrument application
- symptom and cause differentiation
- repair and performance improvement strategies
- removal, replacement and repair, adjustment and post-repair check procedures
- diagnosis theory, including concept, design and planning
- record keeping procedures
- procedures for reporting equipment faults and component defects
- team guidelines regarding acceptable quality and tolerance levels

**REQUIRED SKILLS AND KNOWLEDGE**

- equipment safety requirements
- WHS policies and procedures
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to complex fuel systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply safety requirements, including the isolation of equipment and the use of personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly analyse, repair and conduct post-repair checks on a minimum of four (4) driveline systems faults which could involve:
  - selection, noise, vibration, harshness or slipping faults
  - faults which give the same effects, but may have multiple causes
  - the scope of the faults necessitates the use of a range of testing equipment
- work effectively with others.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - access to competition vehicles driveline systems and

<b>EVIDENCE GUIDE</b>	
	<p>associated test instruments</p> <ul style="list-style-type: none"> <li>• material and equipment</li> <li>• information on work specifications</li> <li>• team requirements</li> <li>• organisational procedures</li> <li>• safety procedures, regulations and quality standards.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Complex performance transmission</b>	A complex performance transmission is defined as one that is a specialised motorsport/performance component integrating two or more systems that use either mechanical, hydraulic, pneumatic or electrical/electronic media
<b>Driveline systems</b>	Driveline systems, including sub-systems and components, may include: <ul style="list-style-type: none"><li>• clutches</li><li>• torque converters</li><li>• manual and automatic transmissions</li><li>• drive shafts</li><li>• final drives</li></ul>
<b>Diagnosis</b>	Diagnosis includes covering: <ul style="list-style-type: none"><li>• module and parts replacement in related electrical, electronic, pneumatic or hydraulic control systems</li></ul>
<b>Driveline system faults</b>	Driveline system faults may include: <ul style="list-style-type: none"><li>• abnormal gear wear</li><li>• abnormal clutch operations</li><li>• contamination</li><li>• hard shifting</li><li>• harshness</li><li>• loose mountings</li><li>• leaks</li><li>• lubrication</li><li>• noises,</li><li>• transmission slippage and vibrations</li><li>• indirect faults caused by the influence of external systems which may or may not be faulty in their primary operation</li></ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include: <ul style="list-style-type: none"><li>• personal protective equipment and clothing, including closed-in shoes, long trousers, handling gloves and other equipment</li><li>• safety equipment</li><li>• first aid equipment</li></ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• team insurance requirements</li> <li>• material safety management systems</li> <li>• controlling body requirements</li> <li>• manufacturer/component supplier specifications\</li> <li>• local safe operating procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• manufacturer/component supplier specialist tooling</li> <li>• jacking and lifting equipment</li> <li>• measuring devices and test instruments</li> <li>• computerised diagnostic systems</li> <li>• computers and related software</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• event scheduling and location details</li> <li>• team procedures and standards related to:</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• applying diagnosing and maintaining complex performance driveline systems</li><li>• life of components</li><li>• reporting and communication</li><li>• use of tooling and equipment</li><li>• emergency service contacts and team persons emergency contacts</li><li>• team emergency and event procedures for accidents or injury</li><li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li><li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li><li>• safety body publications</li><li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURMTS3001 Construct hose and pipe assemblies for competition vehicles

### Modification History

Release	Comment
Release 1	Replaces AURM340607B Construct hose and pipe assemblies for competition vehicles Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required construct hose and pipe assemblies for competition vehicles.</p> <p>It requires the ability to prepare for and use analytical and organisational knowledge, judgement and problem-solving skills in the construction of hose/pipe assemblies for competition vehicles.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who calculate material requirements, select components and construct and test hose and pipe assemblies for competition vehicles in a motorsport environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Use team instructions, supplementary regulations and component supplier specifications to determine job requirements, including design, quality, materials, equipment and quantities</li><li>1.2. Observe workplace health and safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work</li><li>1.3. Check specifications and seek clarification, where required</li><li>1.4. Organise hose/pipe type and fittings according to application</li><li>1.5. Organise tooling and equipment and check for safe and effective operation</li><li>1.6. Clean and lay out work area for job requirements</li><li>1.7. Report problems with the work area or the operation of equipment to appropriate persons</li><li>1.8. Identify procedures for minimising waste material</li></ul>
2. Construct hose/pipe assemblies	<ul style="list-style-type: none"><li>2.1. Measure and calculate hose/pipe length</li><li>2.2. Cut hose/pipe length</li><li>2.3. Bend hose/pipe to conform to fitting requirement</li><li>2.4. Install and secure fittings in accordance with component supplier specifications and procedures or team requirements</li><li>2.5. Clean and pressure-test assembly</li></ul>
3. Clean up work area and complete record keeping	<ul style="list-style-type: none"><li>3.1. Return tooling to storage</li><li>3.2. Tag and shelve/store surplus components and consumables</li><li>3.3. Remove surplus material from work area</li><li>3.4. Clean up spillage from work area and vehicle</li><li>3.5. Complete team/component supplier documentation</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the construction of hose/pipe assemblies for competition vehicles, including tooling, equipment, calculators and measuring devices, and to use pre-checking and inspection techniques to anticipate assembly problems
- communication skills to the level required to communicate ideas and information to enable clarification of requirements and coordination of work with site managers, supervisors or other workers, and to report work outcomes and problems
- literacy skills to the level required to collect, organise and understand information related to team requirements, manufacturer specifications, plans and safety procedures, including interpreting hose/pipe and fitting charts
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during the construction of hose/pipe assemblies for competition vehicles (e.g. flow rates and pressures)
- problem-solving skills to the level required to anticipate changing information requirements or influences
- team skills to the level required to work with others to foster the team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- planning skills to the level required to plan and organise activities, including preparation and layout of the worksite, and coordination of equipment, systems and material to avoid backtracking, workflow interruptions or wastage

#### Required knowledge

Required knowledge includes:

- types of and selection of hoses/pipes and fittings, including:
  - sizing of hoses/pipes and fittings, such as Army-Navy (AN) thread dash number, Society of Automotive Engineers (SAE) and National Pipe Thread (NPT)
  - swaged and reusable fittings
  - hose/pipe material and construction
  - hose/pipe material fuel/lubricant/chemical compatibility
- supplementary regulations
- component supplier specifications
- techniques to:
  - locate and layout hose/pipe assembly

**REQUIRED SKILLS AND KNOWLEDGE**

- measure and cut hoses/pipes
- bend and flare pipes
- assemble hose/pipe
- flush and test hose/pipe assemblies
- protect methods for hose/pipe assemblies
- workplace guidelines:
  - acceptable tolerance levels
  - safety policies and procedures
  - procedures for reporting equipment faults and component defects
  - team requirements and job specifications
  - storage and maintenance of hoses/pipes
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, reporting and recording procedures, relevant to constructing hose and pipe assemblies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret and apply team requirements, controlling body and category rules and supplementary regulations
- apply and use safety equipment and personal protective equipment
- follow task instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to competition vehicle or equipment
  - achieve required outcomes within team time and quality standards
- correctly construct and test hose/pipe assemblies according to application on a minimum of two (2) occasions, covering each of the following:
  - identify suitable hose/pipe and fittings for the application
  - select and apply construction and assembly techniques
  - test assembly to required specification
- work effectively with others
- modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• hose/pipe construction and testing tooling and equipment</li> <li>• computing, operational and inventory support systems</li> <li>• materials, equipment and information on work specifications</li> <li>• customer requirements</li> <li>• organisational procedures</li> <li>• safety procedures and regulations</li> <li>• quality standards.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work

**RANGE STATEMENT**

situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Techniques**

Techniques may include:

- measuring
- calculating
- cutting
- bending
- flaring
- assembling
- testing

**Components**

Components may include:

- braided hose (fabric, metal and Kevlar covered)
- replaceable hose ends and fittings
- metal pipe
- flared and ferrule fittings

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- material safety management systems
- controlling body requirements
- manufacturer specifications
- local safe operating procedures
- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- team insurance requirements

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• industrial relations</li> <li>• Australian standards</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• health regulations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• component supplier tooling</li> <li>• test equipment</li> <li>• hand tooling</li> <li>• measuring devices</li> <li>• calculators</li> </ul>
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• controlling body rules, category rules and supplementary regulations</li> <li>• team procedures and standards relating to:             <ul style="list-style-type: none"> <li>• constructing hose/pipe assemblies</li> <li>• reporting and communication</li> <li>• use of tooling and equipment</li> <li>• emergency service contacts and team persons emergency contacts</li> <li>• team emergency and event procedures for accidents or injury</li> <li>• safety requirements</li> </ul> </li> <li>• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists</li> <li>• manufacturer/component supplier specifications and application procedures for test equipment and material</li> <li>• safety body publications</li> <li>• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Motorsport
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Fabrication
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## AURNTA3001 Inspect, service and repair lift truck mast assemblies

### Modification History

Release	Comment
Release 1	<p>Replaces AURT300771A Inspect, service and repair lift truck mast assemblies</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the inspection, service and repair of lift truck mast assemblies.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and analysis of results, completion of servicing and repair activities and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes lift truck mast assemblies.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect lift truck mast assemblies	<p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5. Technical and/or calibration requirements for inspecting lift truck mast assemblies are sourced and support equipment is identified and prepared</p> <p>1.6. Warnings in relation to working with lift truck mast assemblies are observed</p>
2. Conduct inspection and analyse results	<p>2.1. Methods for inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2. Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3. Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4. Report is processed in accordance with workplace procedures</p>
3. Prepare to service/repair lift truck mast assemblies	<p>3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2. Procedures and information identified and sourced</p> <p>3.3. Technical and tool requirements for service/repair of lift truck mast assemblies are identified and support equipment is identified and prepared</p>
4. Carry out service and repairs	<p>4.1. Methods for service and repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2. Adjustments made during the service and repair are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle for use or storage	<p>5.1. Service/repairs schedule documentation is completed</p> <p>5.2. Final inspection is made to ensure protective guards,</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>safety features and cowlings are in place</p> <p>5.3. Final inspection is made to ensure work is to workplace expectations</p> <p>5.4. Lift truck is cleaned for use or storage to workplace expectations</p> <p>5.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection, servicing and repair of lift truck mast assemblies, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with lift truck mast assemblies
- operating principles of lift truck mast assemblies and their relationship to other components
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service and/or repair procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting inspection results
- conducting inspection, service and repair in accordance with workplace and manufacturer/component supplier requirements
- completing service and repair of lift truck mast assemblies and associated components within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection, servicing and repair of lift truck mast assemblies
- equipment, hand and power tooling appropriate to inspection, servicing and repair of lift truck mast assemblies
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and cleanup management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault

<b>RANGE STATEMENT</b>	
	documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection, servicing and repair of lift truck mast assemblies</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical - Lifting Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURPTA1001 Carry out pre-repair operations to outdoor power equipment

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to prepare and clean outdoor power equipment and components by mechanical or chemical means and prepare equipment or components in readiness for either storage or repair.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, cleaning of components, the removal of components, tagging and storage of components and completion of work finalisation processes, including clean-up and documentation.</p> <p>No licencing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to lawn mowers, chainsaws, pumps, post-hole borers, portable generators and stationary engines, as well as brush cutters, leaf blowers and other light-engine outdoor power equipment.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake pre-repair operations	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Method options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate tools and equipment are selected and prepared</p> <p>1.6. Warnings relating to working with <b>cleaning materials</b> are observed</p>
2. Clean equipment or components prior to repair or storage	<p>2.1. Cleaning materials and <b>equipment</b> are used according to workplace procedures and manufacturer and component supplier specifications</p> <p>2.2. Components are cleaned to workplace expectations and without causing damage to components or systems</p> <p>2.3. Used cleaning agents and waste materials are safely disposed of according to industry regulations and guidelines and workplace requirements</p> <p>2.4. Cleaning activities are carried out according to industry regulations and guidelines, workplace health and safety and <b>environmental requirements</b></p>
3. Clean up work area and finalise work processes	<p>3.1. Components are prepared for further repair procedures or treated with rust prevention material when being stored</p> <p>3.2. Components are stored according to workplace procedures, to prevent injury to self and others or damage to components</p> <p>3.3. Tools and equipment are checked and stored according to workplace expectations</p> <p>3.4. Pre-repair operation documentation is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow oral and written instructions
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during pre-repair operations
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
- technical skills to use workplace tools and equipment relating to the pre-repair operations of outdoor power equipment

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with chemical cleaning agents and cleaning equipment
- cleaning procedures
- environmental considerations related to chemical and cleaning agent use
- storage procedures of cleaned outdoor power equipment components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- conduct cleaning and storage operations according to workplace requirements
- complete workplace documentation according to workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available for the assessment of this unit:

- workplace location or simulated workplace
- outdoor power equipment and outdoor power equipment components requiring pre-repair operations
- equipment, cleaning agents and material relevant to carrying out pre-repair operations
- hand tools appropriate to carrying out pre-repair operations

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and work instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace instructions*** may include:

- computer-generated instructions
- verbal instructions
- written instructions.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Procedures and information*** may include:

- safe work procedures relating to outdoor power equipment pre-repair operations
- verbal, written and graphical instructions
- signage.
- work schedules, plans and specifications
- work bulletins or memos
- material safety data sheets (MSDS)
- diagrams or sketches
- regulatory and legislative requirements relating to the automotive industry
- Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards
- outdoor power equipment repair manuals.

***Method options*** may include:

- steam cleaning
- high-pressure washing
- manual washing
- the use of protective coverings

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>dismantling.</li> </ul>
<i><b>Cleaning materials</b></i> may include:	<ul style="list-style-type: none"> <li>cleaning agents</li> <li>sprays (dewaxing, detergents, degreasers, special purpose agents)</li> <li>rust prevention material.</li> </ul>
<i><b>Equipment</b></i> may include:	<ul style="list-style-type: none"> <li>hand tools and equipment</li> <li>personal and vehicle protection</li> <li>storage tubs and racks</li> <li>special equipment (pressure washers, steam cleaners, spray equipment), power tools</li> <li>jacks and stands</li> <li>lifting equipment.</li> </ul>
<i><b>Environmental requirements</b></i> may include:	<ul style="list-style-type: none"> <li>waste management</li> <li>chemical and cleaning agent management</li> <li>control of noise and fumes</li> <li>clean-up management.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Outdoor Power Equipment
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURPTA1002 Perform minor adjustments to outdoor power equipment

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to carry out minor adjustments to components and equipment on outdoor power equipment.</p> <p>The unit involves demonstrating knowledge of outdoor power equipment componentry and operation and using mechanical hand tools to make adjustments to outdoor power equipment to ensure safe and efficient performance.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to minor mechanical adjustment of outdoor power equipment, components and systems.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and adjust outdoor power equipment	1.1. Job requirements are checked and confirmed according to <b>workplace procedures</b> and customer requirements 1.2. <b>Tools and equipment</b> are selected to meet job requirements 1.3. Work area is checked for safe working conditions and cleanliness prior to commencing task 1.4. <b>Workplace health and safety (WHS) requirements</b> and other appropriate precautions are identified and taken
2. Inspect outdoor power equipment and determine work requirement	2.1. Standard workplace inspection procedures for <b>outdoor power equipment</b> are used to determine condition 2.2. Service and repair options for outdoor power equipment are identified 2.3. <b>Workplace documentation</b> procedures are used to record minor adjustments to be performed
3. Perform minor adjustments	3.1. Tools and equipment are handled and used according to WHS requirements 3.2. <b>Minor adjustments</b> are performed on outdoor power equipment according to manufacturer and component supplier specifications 3.3. Outdoor power equipment component or system having undergone maintenance is operated through full range, noting test results, including non-conformity 3.4. Workplace documentation is used to record any work requirements beyond the scope of minor adjustments being performed
4. Clean up work area and finalise work processes	4.1. Tools and equipment are checked and stored according to workplace expectations 4.2. Work area is cleaned and tidied according to workplace procedures 4.3. Workplace documentation is completed according to workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - confirm work requirements and specifications
  - communicate effectively regarding work requirements with supervisor or other workers
  - report work outcomes and other requirements
- literacy skills:
  - reading skills to the level required to understand information relating to work orders, including common industry terminology and safety procedures
  - writing skills to prepare reports and interpret technical information and specifications
- numeracy skills to interpret instruments, gauges and measuring equipment
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities which implement and follow standard workplace procedures
- problem-solving skills to:
  - identify technical and procedural problems
  - refer problems outside area of responsibility to appropriate person
  - self-management skills to:
    - locate and identify appropriate tools and equipment
    - recognise limitations and seek timely advice
    - follow basic workplace documentation, such as minor maintenance procedures
- teamwork skills to: work with others to contribute to job requirements and work outcomes
- technical skills to:
  - select tools and equipment appropriate to the task
  - use tools and equipment to perform minor adjustments to outdoor power equipment components and systems
- technology skills to use workplace technology to assist with work practices

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements relevant to outdoor power equipment
- methods of sourcing information relevant to performing minor adjustments to outdoor power equipment
- types and application of appropriate tools and equipment
- adjustment methods for outdoor power equipment
- workplace documentation policies and procedures



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select adjustment methods and techniques appropriate to the circumstances
- carry out a minimum of three minor adjustments according to workplace and manufacturer and component supplier specifications

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources should be made available:

- a range of outdoor power equipment
- hand and power tools and specialised repair tools and equipment appropriate for performing minor adjustments to outdoor power equipment
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Workplace procedures** may include:

- verbal or written and graphical instructions
- written maintenance procedures
- safety and emergency procedures
- service instructions
- reporting and recording procedures
- sustainability and environmental considerations
- organisational quality policies and procedures.

**Tools and equipment** may include:

- hand tools
- hand-held power tools and air tools
- specialised outdoor power equipment repair tools
- floor stands, workbench.

**Workplace health and safety (WHS) requirements:**

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

**Outdoor power equipment** types may include:

- lawn mowers
- chainsaws
- line trimmers
- mulchers
- pumps
- post-hole borers
- portable generators
- stationary engines
- brush cutters
- leaf blowers.

**Workplace documentation** may include:

- job card or work schedule
- work bulletins
- memos

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• regulatory/legislative requirements pertaining to outdoor power equipment safety</li> <li>• manufacturers design specifications and maintenance instructions</li> <li>• organisation work specifications and requirements</li> <li>• Australian standards.</li> </ul>
<i>Minor adjustments</i> may include adjustments to:	<ul style="list-style-type: none"> <li>• cutting systems</li> <li>• belt tension</li> <li>• cables and controls</li> <li>• carburettors</li> <li>• engine components</li> <li>• brakes</li> <li>• clutch</li> <li>• steering system</li> <li>• chain tension</li> <li>• foot controls.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Outdoor Power Equipment
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURPTA2003 Service and repair rotary cutting systems

### Modification History

Release	Comment
Release 1	Replaces AURP245171B Service and repair rotary cutting systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service and repair rotary cutting systems, including removal, repair/replacement, fitting and adjustment of components.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing and repair of rotary cutting systems in the outdoor power equipment industry.</p> <p>Rotary cutting systems include electric and petrol driven rotary mowers, lawn edgers and brush cutters, and rotary cutting systems fitted to tractors, such as rotary hoes, chippers and mulchers.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and repair operation	1.1. Identify and confirm work to be carried out 1.2. Access and interpret service and repair procedures, workshop manuals and manufacturer information 1.3. Identify and prepare tools, equipment and materials required for servicing and repair job 1.4. Set up work area
2. Determine service and repair requirements	2.1. Check customer requirements and equipment specifications, following workplace procedures 2.2. Test rotary cutting system, identify and document faults following workplace procedures 2.3. Plan and cost service and repair procedure 2.4. Discuss recommended repair process with customer and obtain authorisation to proceed
3. Service and repair rotary cutting system	3.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 3.2. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 3.3. Remove components for repair procedure and inspect for condition and serviceability 3.4. Discard unusable components and retain reusable and repairable components, following workplace procedures 3.5. Determine availability of replacement parts, qualified repair staff or subcontractors and facilities 3.6. Follow service and repair procedures and check work at designated points to determine serviceability of sub-assemblies and conformity to specifications 3.7. Fit reusable, repaired and replacement parts in accordance with manufacturer/component supplier specifications and workplace procedures
4. Check rotary cutting system for normal operation	4.1. Operate rotary cutting system through full operating range 4.2. Check operation against equipment specifications and customer requirements 4.3. Make any adjustments as required and re-test 4.4. Check adjustments, fluid levels and alignments

ELEMENT	PERFORMANCE CRITERIA
	4.5. Complete workplace documentation and update customer and warranty information as required
5. Complete work and return unit to customer	5.1. Inspect repaired unit to ensure protective guards, cowlings and safety features are in place 5.2. Clean unit to workplace expectations 5.3. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures 5.4. Provide customer report on repairs and replacements and explain follow-up adjustments, use and care of equipment and warranty requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to repairing rotary cutting systems
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- dangers of working with rotary cutting equipment
- the relationship of a rotary cutting system to the power unit, drive, safety and adjustment systems and overload protection device
- mechanical and hydraulic principles relevant to rotary cutting systems
- classifications of rotary cutting systems and components
- material used in rotary cutting system components
- types and causes of faults in rotary cutting systems
- types and layout of service/repair manuals (hard copy and electronic)
- servicing and repair procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing and

**REQUIRED SKILLS AND KNOWLEDGE**

- repairing rotary cutting systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing and repairing rotary cutting systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret test results
- conduct service and repair of a range of rotary cutting systems in accordance with workplace and manufacturer/component supplier requirements
- complete service and repair of rotary cutting systems and associated components within workplace timeframes
- present rotary cutting equipment to customer in compliance with workplace requirements
- complete workplace records.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of rotary cutting systems and components
  - an area for safe testing of rotary cutting systems
  - materials relevant to servicing and repair of rotary cutting systems
  - equipment, hand and power tooling appropriate to

<b>EVIDENCE GUIDE</b>	
	servicing and repair of rotary cutting systems <ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Rotary cutting systems</b>	Rotary cutting systems may include: <ul style="list-style-type: none"> <li>• electric or petrol driven</li> <li>• rotary mowers, lawn edgers and brush cutters</li> <li>• rotary cutting systems fitted to tractors, such</li> </ul>

<b>RANGE STATEMENT</b>	
	as rotary hoes, chippers and mulchers
<b>Servicing and repair methods</b>	<p>Servicing and repair methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing and repair</li> <li>• inspection, repair and replacement of components</li> <li>• adjustments</li> <li>• lubricating</li> <li>• testing of repaired unit</li> <li>• communicating with customers</li> <li>• documenting and reporting on service and repair</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• equipment/floor stands</li> <li>• specific service/repair and general workshop equipment and tooling</li> <li>• jacks, air and electric tooling</li> <li>• measuring equipment</li> <li>• exhaust gas extraction system</li> <li>• lifting equipment</li> <li>• lubricating equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing and repairing rotary cutting systems</li> <li>• regulatory/legislative requirements pertaining to rotary cutting systems</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURPTA2004 Service and repair drum cutting systems

### Modification History

Release	Comment
Release 1	Replaces AURP245271B Service and repair drum cutting systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service and repair drum cutting systems appropriate to outdoor power equipment, including removal, repair/replacement, fitting and adjustment of components.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing and repair of drum cutting systems in the outdoor power equipment industry.</p> <p>Drum cutting systems may be self-propelled, hand-operated, electric and petrol and include drum cutting systems fitted to gang mowers, chippers and mulchers.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and repair operation	1.1. Identify and confirm work to be carried out 1.2. Access and interpret service and repair procedures, workshop manuals and manufacturer's information 1.3. Identify and prepare tools, equipment and materials required for servicing and repair job 1.4. Set up work area
2. Determine service and repair requirements	2.1. Check customer requirements and equipment specifications following workplace procedures 2.2. Test drum cutting system, identify and document faults following workplace procedures 2.3. Plan and cost service and repair procedure 2.4. Discuss recommended repair process with customer and obtain authorisation to proceed
3. Service and repair drum cutting system	3.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 3.2. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 3.3. Remove components for repair procedure and inspect for condition and serviceability 3.4. Discard unusable components and retain reusable and repairable components, following workplace procedures 3.5. Determine availability of replacement parts, qualified repair staff or subcontractors and facilities 3.6. Follow service and repair procedures and check work at designated points to determine serviceability of sub-assemblies and conformity to specifications 3.7. Fit reusable, repaired and replacement parts in accordance with manufacturer/component supplier specifications and workplace procedures
4. Check drum cutting system for normal operation	4.1. Operate drum cutting system through full operating range 4.2. Check operation against equipment specifications and customer requirements 4.3. Make any adjustments as required and re-test 4.4. Check adjustments, fluid levels and alignments

ELEMENT	PERFORMANCE CRITERIA
	4.5. Complete workplace documentation and update customer and warranty information as required
5. Complete work and return unit to customer	5.1. Inspect repaired unit to ensure protective guards, cowlings and safety features are in place 5.2. Clean unit to workplace expectations 5.3. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures 5.4. Provide customer report on repairs and replacements and explain follow-up adjustments, use and care of equipment and warranty requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to repairing drum cutting systems
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- dangers of working with drum cutting equipment
- the relationship of a drum cutting system to the power unit, drive, safety and adjustment systems and overload protection device
- mechanical principles relevant to drum cutting systems
- classifications of drum cutting systems and components
- material used in drum cutting system components
- types and causes of faults in drum cutting systems
- types and layout of service/repair manuals (hard copy and electronic)
- servicing and repair procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing and

**REQUIRED SKILLS AND KNOWLEDGE**

- repairing drum cutting systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing and repairing drum cutting systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret test results
- conduct service in accordance with workplace and manufacturer/component supplier requirements
- repair/replace, fit and adjust components in accordance with specifications and workplace procedures
- check adjustments and alignments of drum cutting systems
- complete service and repair of drum cutting systems and associated components within workplace timeframes
- present drum cutting equipment to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of drum cutting systems and components
  - an area for safe testing of drum cutting systems

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>materials relevant to servicing and repair of drum cutting systems</li> <li>equipment, hand and power tooling appropriate to servicing and repair of drum cutting systems</li> <li>specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Drum cutting systems</b>	Drum cutting systems may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• self-propelled, hand-operated, electric or petrol driven</li> <li>• drum cutting systems fitted to gang mowers, chippers and mulchers</li> </ul>
<b>Servicing and repair methods</b>	<p>Servicing and repair methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing and repair</li> <li>• inspection, repair and replacement of components</li> <li>• adjustments</li> <li>• lubricating</li> <li>• testing of repaired unit including impact and overload protection</li> <li>• communicating with customers</li> <li>• documenting and reporting on service and repair</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• equipment/floor stands</li> <li>• specific service/repair and general workshop equipment and tooling</li> <li>• jacks, air and electric tooling</li> <li>• measuring equipment</li> <li>• exhaust gas extraction system</li> <li>• lifting equipment</li> <li>• welding equipment</li> <li>• lubricating equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing and repairing drum cutting systems</li> <li>• regulatory/legislative requirements pertaining to drum cutting systems</li> <li>• engineer's design specifications and</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>instructions</p> <ul style="list-style-type: none"> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURPTA2005 Service and repair chainsaw cutting systems

### Modification History

Release	Comment
Release 1	Replaces AURP245371B Service and repair chainsaw cutting systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service and repair chainsaw cutting systems, including removal, repair/replacement, fitting and adjustment of components.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p> <p>This unit replaces AURPTA2005 Service and repair chainsaw cutting systems.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing and repair of chainsaw cutting systems in the outdoor power equipment industry.</p> <p>Chainsaw cutting systems may be fitted to chainsaws and other equipment which may be electric, air, hydraulic and petrol powered.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and repair operation	1.1. Identify and confirm work to be carried out 1.2. Access and interpret service and repair procedures, workshop manuals and manufacturer information 1.3. Identify and prepare tools, equipment and materials required for servicing and repair job 1.4. Set up work area
2. Determine service and repair requirements	2.1. Check customer requirements and equipment specifications following workplace procedures 2.2. Follow safety procedures, including personal protection needs, for handling chainsaws 2.3. Remove chain and guide bar and inspect for wear and damage 2.4. Plan and cost service and repair procedure 2.5. Discuss recommended repair process with customer and obtain authorisation to proceed
3. Service and repair chainsaw cutting system	3.1. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 3.2. Check equipment manufacturer/component supplier service specifications and recommendations 3.3. Remove components for repair procedure and inspect for condition and serviceability 3.4. Discard unusable components and retain reusable and repairable components following workplace procedures 3.5. Determine availability of replacement parts, qualified repair staff or subcontractors 3.6. Fit reusable, repaired and replacement parts in accordance with manufacturer/component supplier specifications and workplace procedures 3.7. Sharpen chain cutting system components to provide effective cutting edges 3.8. Adjust and tension components in accordance with manufacturer/component supplier specifications 3.9. Perform lubrication and alignment checks
4. Check chainsaw cutting system for normal operation	4.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs, for operating a chainsaw

ELEMENT	PERFORMANCE CRITERIA
	<ul style="list-style-type: none"><li>4.2.Start up chainsaw and check operation of safety features against equipment specifications</li><li>4.3.Make any adjustments as required and re-test</li><li>4.4.Check adjustments, fluid levels and alignments</li><li>4.5.Complete workplace documentation and update customer and warranty information as required</li></ul>
5. Complete work and return unit to customer	<ul style="list-style-type: none"><li>5.1.Inspect repaired unit to ensure protective guards, cowlings and safety features are in place</li><li>5.2.Clean unit to workplace expectations</li><li>5.3.Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures</li><li>5.4.Provide customer report on repairs and replacements and explain follow-up adjustments, use and care of equipment and warranty requirements</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to repairing chainsaw cutting systems and to safely start a chainsaw
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- dangers of working with chainsaw cutting equipment
- safe starting procedures for chainsaws
- the relationship of a chainsaw cutting system to the power unit, drive, safety and adjustment systems and overload protection device
- mechanical principles relevant to chainsaw cutting systems
- classifications of chainsaw cutting systems and components
- material used in chainsaw cutting system components
- types and causes of faults in chainsaw cutting systems
- types and layout of service/repair manuals (hard copy and electronic)
- servicing and repair procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications

**REQUIRED SKILLS AND KNOWLEDGE**

- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing and repairing chainsaw cutting systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing and repairing chainsaw cutting systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret test results
- conduct service in accordance with workplace and manufacturer/component supplier requirements
- repair/replace, fit, sharpen and adjust a range of chainsaw components in accordance with specifications and workplace procedures
- safely start and check operation, adjustments and alignments of chainsaw cutting systems
- complete service and repair of chainsaw cutting systems and associated components within workplace timeframes
- present repaired chainsaw cutting equipment to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of chainsaw cutting systems and components

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• area and equipment, including personal protection needs for safe testing of chainsaw cutting systems</li> <li>• materials relevant to servicing and repair of chainsaw cutting systems</li> <li>• equipment, hand and power tooling appropriate to servicing and repair of chainsaw cutting systems</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Chainsaw cutting systems</b>	<p>Chainsaw cutting systems may include:</p> <ul style="list-style-type: none"> <li>• electric, air, hydraulic and petrol powered</li> <li>• equipment fitted with a chain cutting system</li> <li>• chain cutting system components fitted to chainsaws</li> </ul>
<b>Chainsaw system variables</b>	<p>Chainsaw system variables may include:</p> <ul style="list-style-type: none"> <li>• nickel alloy and chrome-plated cutters</li> <li>• replaceable sprocket nose or stellite-tipped bar</li> <li>• impact and overload protection</li> <li>• safety brake</li> <li>• manual and automatic lubrication</li> </ul>
<b>Servicing and repair methods</b>	<p>Servicing and repair methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing and repair</li> <li>• inspection, repair and replacement of components</li> <li>• fault rectification, sharpening, grinding, tension adjusting and testing chain cutting system components</li> <li>• breaking and joining, adjusting, aligning, lubricating and testing chainsaw cutting systems</li> <li>• communicating with customers</li> <li>• documenting and reporting on service and repair</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• general workshop equipment</li> <li>• sharpening equipment</li> <li>• equipment stands/vices</li> <li>• air tooling</li> <li>• grinders</li> <li>• chain breaking and riveting equipment</li> <li>• exhaust gas extraction system</li> <li>• lubrication and cleaning equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>

**RANGE STATEMENT**

<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing and repairing chainsaw cutting systems and operating chainsaws</li> <li>• regulatory/legislative requirements pertaining to chainsaw cutting systems and chainsaw operation</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURPTA2006 Service line trimming systems and components

### Modification History

Release	Comment
Release 1	Replaces AURP245465B Service line trimming systems and components  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service line trimming systems, including removal, replacement, fitting and adjustment of components.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing and repair of line trimming systems in the outdoor power equipment industry.</p> <p>Line trimming equipment may include brush cutters and lawn edgers which may be electric or petrol driven, stand-alone or fitted to other equipment systems.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service operation	1.1. Identify and confirm work to be carried out 1.2. Access and interpret service and repair procedures, workshop manuals and manufacturer's information 1.3. Identify and prepare tools, equipment and materials required for servicing job 1.4. Set up work area
2. Determine service requirements	2.1. Check customer requirements and equipment specifications following workplace procedures 2.2. Check line trimming system components for suitability of purpose 2.3. Plan and cost service procedure 2.4. Discuss recommended service items with customer and obtain authorisation to proceed
3. Service line trimming system	3.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 3.2. Plan task sequence to include testing and checking processes 3.3. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 3.4. Remove components as planned and inspect for condition and serviceability 3.5. Discard unusable components and retain reusable and components following workplace procedures 3.6. Fit reusable and replacement components and adjust to line trimming system specifications and customer requirements
4. Check line trimming system for normal operation	4.1. Operate line trimming system through full operating range 4.2. Check operation against equipment specifications and customer requirements 4.3. Make any adjustments as required and re-test 4.4. Complete workplace documentation and update customer and warranty information as required
5. Complete work and return unit to customer	5.1. Inspect serviced unit to ensure protective guards, cowlings and safety features are in place 5.2. Clean unit to workplace expectations

ELEMENT	PERFORMANCE CRITERIA
	<p>5.3.Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures</p> <p>5.4.Provide customer report on service and replacements and explain follow-up adjustments, use and care of equipment and warranty requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to removing, fitting and adjusting line trimming system components
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles of line trimming systems
- classifications of line trimming systems and components
- material used in line trimming system components
- types and causes of faults in line trimming systems
- types and layout of service/repair manuals (hard copy and electronic)
- component removal, fitting and adjusting procedures
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing line trimming systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing line trimming systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- complete removal, fitting and adjustment of a range of line trimming system components in accordance with workplace and manufacturer/component supplier requirements
- complete work within workplace timeframes
- present line trimming equipment to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of line trimming systems and components
  - an area for safe testing of line trimming systems
  - materials relevant to servicing of line trimming systems
  - equipment, hand and power tooling appropriate to servicing of line trimming systems

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Line trimming equipment</b>	<p>Line trimming equipment may include:</p> <ul style="list-style-type: none"> <li>• brush cutters and lawn edgers</li> <li>• electric motor and petrol engine driven</li> <li>• stand-alone or fitted to other equipment systems</li> </ul>

**RANGE STATEMENT****Component variables**

Component variables may include:

- impact and overload protection
- automatic and manual line adjustment
- line sizes and types
- metal blades
- handles and harness
- brush cutter angle drives
- bent and straight drive shafts

**Servicing and repair methods**

Servicing and repair methods may include:

- on- and off-site servicing and repair
- inspection and replacement of components
- adjustments
- testing of unit
- communicating with customers
- documenting and reporting on service and replacement

**Tooling and equipment**

Tooling and equipment may include:

- equipment/floor stands
- specific service/repair and general workshop equipment and tooling
- measuring equipment
- exhaust gas extraction system
- lubricating equipment

**Materials**

Materials may include:

- spare parts
- line
- lubricants
- cleaning materials

**Information/documents**

Information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- safe work procedures related to servicing line trimming systems
- regulatory/legislative requirements pertaining to line trimming systems
- engineer's design specifications and

<b>RANGE STATEMENT</b>	
	<p>instructions</p> <ul style="list-style-type: none"> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURPTA2007 Service and repair post-boring systems

### Modification History

Release	Comment
Release 1	Replaces AURP245571B Service and repair post-boring systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to rectify faults in post-boring and drilling systems, including those attached to chainsaws.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing and repair of post-boring systems in the outdoor power equipment industry.</p> <p>Post-boring systems may be stand-alone or chainsaw attachments and may be either electric or petrol driven.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and repair operation	1.1. Identify and confirm work to be carried out 1.2. Access and interpret service and repair procedures, workshop manuals and manufacturer information 1.3. Identify and prepare tools, equipment and materials required for servicing and repair job 1.4. Set up work area
2. Determine service and repair requirements	2.1. Check customer requirements and equipment specifications following workplace procedures 2.2. Test post-boring system, identify faults and document test results following workplace procedures 2.3. Plan and cost service and repair procedure 2.4. Discuss recommended repair process with customer and obtain authorisation to proceed
3. Service and repair post-boring system	3.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 3.2. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 3.3. Remove components for repair procedure and inspect for condition and serviceability 3.4. Discard unusable components and retain reusable and repairable components following workplace procedures 3.5. Determine availability of replacement parts, qualified repair staff or subcontractors and facilities 3.6. Follow service and repair procedures and check work at designated points to determine serviceability of sub-assemblies and conformity to specifications 3.7. Fit reusable, repaired and replacement parts in accordance with manufacturer/component supplier specifications and workplace procedures
4. Check post-boring system for normal operation	4.1. Operate post-boring system through full operating range 4.2. Check operation against equipment specifications and customer requirements 4.3. Make any adjustments as required and re-test

ELEMENT	PERFORMANCE CRITERIA
	<p>4.4. Check adjustments, fluid levels and alignments</p> <p>4.5. Complete workplace documentation and update customer and warranty information as required</p>
5. Complete work and return unit to customer	<p>5.1. Inspect repaired unit to ensure protective guards, cowlings and safety features are in place</p> <p>5.2. Clean unit to workplace expectations</p> <p>5.3. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures</p> <p>5.4. Provide customer report on repairs and replacements and explain follow-up adjustments, use and care of equipment and warranty requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to repairing and testing post-boring systems
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- dangers of working with post-boring equipment
- the relationship of a post-boring system to power unit, drive, safety, reversing and adjustment systems and overload protection device
- mechanical principles relevant to post-boring systems
- classifications of post-boring systems and components
- material used in post-boring system components
- types and causes of faults in post-boring systems
- types and layout of service/repair manuals (hard copy and electronic)
- servicing and repair procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing and

**REQUIRED SKILLS AND KNOWLEDGE**

- repairing post-boring systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing and repairing post-boring systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret test results
- repair/replace, fit and adjust components in accordance with specifications and workplace procedures
- complete service and repair of post-boring systems within workplace timeframes
- present post-boring equipment to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of post-boring systems and components
  - an area for safe testing of post-boring systems
  - materials relevant to servicing and repair of post-boring systems
  - equipment, hand and power tooling appropriate to servicing and repair of post-boring systems

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Post-boring systems</b>	<p>Post-boring systems may be:</p> <ul style="list-style-type: none"> <li>• stand-alone or chainsaw attachments</li> <li>• electric or petrol driven</li> </ul>
<b>Servicing and repair methods</b>	Servicing and repair methods may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• on- and off-site servicing and repair</li> <li>• inspection, repair and replacement of components</li> <li>• adjustments</li> <li>• lubricating</li> <li>• testing of repaired unit including overload protection</li> <li>• communicating with customers</li> <li>• documenting and reporting on service and repair</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• equipment/floor stands</li> <li>• specific service/repair and general workshop equipment and tooling</li> <li>• jacks, air and electric tooling</li> <li>• measuring equipment</li> <li>• exhaust gas extraction system</li> <li>• lifting equipment</li> <li>• welding equipment</li> <li>• lubricating equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing and repairing post-boring systems</li> <li>• regulatory/legislative requirements pertaining to post-boring systems</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

<b>RANGE STATEMENT</b>	
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>

**RANGE STATEMENT****Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)****Unit sector**

Outdoor Power Equipment

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical

## AURPTA2008 Service and repair post-hole digging systems

### Modification History

Release	Comment
Release 1	Replaces AURP245671B Service and repair post-hole digging systems  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to rectify faults in post-hole digging systems.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake servicing and repair of post-hole digging systems in the outdoor power equipment industry.  Post-hole digging systems may be powered by electric, diesel and petrol engines and may be hand-held equipment or fitted to tractors or platforms.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and repair operation	1.1. Identify and confirm work to be carried out 1.2. Access and interpret service and repair procedures, workshop manuals and manufacturer's information 1.3. Identify and prepare tools, equipment and materials required for servicing and repair job 1.4. Set up work area
2. Determine service and repair requirements	2.1. Check customer requirements and equipment specifications following workplace procedures 2.2. Test post-hole digging system, identify faults and document test results following workplace procedures 2.3. Plan and cost service and repair procedure 2.4. Discuss recommended repair process with customer and obtain authorisation to proceed
3. Service and repair post-hole digging system	3.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 3.2. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 3.3. Remove components for repair procedure and inspect for condition and serviceability 3.4. Discard unusable components and retain reusable and repairable components following workplace procedures 3.5. Determine availability of replacement parts, qualified repair staff or subcontractors and facilities 3.6. Follow service and repair procedures and check work at designated points to determine serviceability of sub-assemblies and conformity to specifications 3.7. Fit reusable, repaired and replacement parts in accordance with manufacturer/component supplier specifications and workplace procedures
4. Check post-hole digging system for normal operation	4.1. Operate post-hole digging system through full operating range 4.2. Check operation against equipment specifications and customer requirements 4.3. Make any adjustments as required and re-test

ELEMENT	PERFORMANCE CRITERIA
	<p>4.4. Check adjustments, fluid levels and alignments</p> <p>4.5. Complete workplace documentation and update customer and warranty information as required</p>
5. Complete work and return unit to customer	<p>5.1. Inspect repaired unit to ensure protective guards, cowlings and safety features are in place</p> <p>5.2. Clean unit to workplace expectations</p> <p>5.3. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures</p> <p>5.4. Provide customer report on repairs and replacements and explain use and care of equipment and warranty requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology, equipment and tools related to repairing and testing post-hole digging systems
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- dangers of working with post-hole digging equipment
- the relationship of a post-hole digging system to power unit, drive, safety, reversing and adjustment systems and overload protection device
- mechanical principles relevant to post-hole digging systems
- classifications of post-hole digging systems and components
- material used in post-hole digging system components
- types and causes of faults in post-hole digging systems
- types and layout of service/repair manuals (hard copy and electronic)
- servicing and repair procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing and

**REQUIRED SKILLS AND KNOWLEDGE**

- repairing post-hole digging systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes related to servicing and repairing post-hole digging systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret test results
- repair/replace, fit and adjust components in accordance with specifications and workplace procedures
- complete service and repair of post-hole diggers and associated components within workplace timeframes
- present post-hole digging equipment to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of post-hole digging systems and components
  - an area for safe testing of post-hole digging systems
  - materials relevant to servicing and repair of post-hole digging
  - equipment, hand and power tooling appropriate to servicing and repair of post-hole digging systems

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Post-hole digging systems</b>	<p>Post-hole digging systems may be:</p> <ul style="list-style-type: none"> <li>• powered by electric, diesel and petrol engines</li> <li>• hand-held equipment</li> <li>• fitted to tractors or platforms</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Component variables</b>	<p>Post-hole digging system variables may include:</p> <ul style="list-style-type: none"> <li>• tungsten, diamond-tipped and steel augers</li> <li>• impact and overload protection</li> <li>• height adjustment</li> </ul>
<b>Servicing and repair methods</b>	<p>Servicing and repair methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing and repair</li> <li>• inspection, repair and replacement of components</li> <li>• adjustments</li> <li>• lubricating</li> <li>• testing of repaired unit, including overload protection</li> <li>• communicating with customers</li> <li>• documenting and reporting on service and repair</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• equipment/floor stands</li> <li>• specific service/repair and general workshop equipment and tooling</li> <li>• jacks, air and electric tooling</li> <li>• measuring equipment</li> <li>• exhaust gas extraction system</li> <li>• lifting equipment</li> <li>• welding equipment</li> <li>• lubricating equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing and repairing post-hole digging systems</li> <li>• regulatory/legislative requirements pertaining to post-hole digging systems</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURPTA2009 Service and repair reciprocating cutting systems

### Modification History

Release	Comment
Release 1	Replaces AURP245771B Service and repair reciprocating cutting systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service and repair reciprocating cutting systems fitted to outdoor power equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing and repair of reciprocating cutting systems in the outdoor power equipment industry.</p> <p>Reciprocating cutting systems include hedge trimmers, tree loppers and power shears, which may be electric, air, hydraulic or petrol driven.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for service and repair operation	1.1. Identify and confirm work to be carried out 1.2. Access and interpret service and repair procedures, workshop manuals and manufacturer information 1.3. Identify and prepare tools, equipment and materials required for servicing and repair job 1.4. Set up work area
2. Determine service and repair requirements	2.1. Check customer requirements and equipment specifications following workplace procedures 2.2. Test reciprocating cutting system, identify and document faults following workplace procedures 2.3. Plan and cost service and repair procedure 2.4. Discuss recommended repair process with customer and obtain authorisation to proceed
3. Service and repair reciprocating cutting system	3.1. Identify and observe applicable workplace health safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 3.2. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 3.3. Remove components for repair procedure and inspect for condition and serviceability 3.4. Discard unusable components and retain reusable and repairable components following workplace procedures 3.5. Determine availability of replacement parts, qualified repair staff or subcontractors and facilities 3.6. Follow service and repair procedures and check work at designated points to determine serviceability of sub-assemblies and conformity to specifications 3.7. Fit reusable, repaired and replacement parts in accordance with manufacturer/component supplier specifications and workplace procedures
4. Check reciprocating cutting system for normal operation	4.1. Operate reciprocating cutting system through full operating range 4.2. Check operation against equipment specifications and customer requirements 4.3. Make any adjustments as required and re-test 4.4. Check adjustments, fluid levels and alignments

ELEMENT	PERFORMANCE CRITERIA
	4.5. Complete workplace documentation and update customer and warranty information as required
5. Complete work and return unit to customer	5.1. Inspect repaired unit to ensure protective guards, cowlings and safety features are in place 5.2. Clean unit to workplace expectations 5.3. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures 5.4. Provide customer report on repairs and replacements and explain follow-up adjustments, use and care of equipment and warranty requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology, equipment and tools related to repairing reciprocating cutting systems
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- dangers of working with reciprocating cutting equipment
- dangers of working with 240 V equipment
- operating principles of reciprocating cutting systems
- the relationship of a reciprocating cutting system to power unit, drive, safety and adjustment systems and overload protection device
- classification of reciprocating cutting systems and identification of components
- types and causes of faults in reciprocating cutting systems
- types and layout of service/repair manuals (hard copy and electronic)
- servicing and repair procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing and

**REQUIRED SKILLS AND KNOWLEDGE**

- repairing reciprocating cutting systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes related to servicing and repairing reciprocating cutting systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret test results
- complete service and repair of a range of reciprocating cutting systems and associated components within workplace timeframes and to manufacturer specifications
- present reciprocating cutting equipment to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of reciprocating cutting systems and components
  - an area for safe testing of reciprocating cutting systems
  - materials relevant to servicing and repair of reciprocating cutting systems
  - equipment, hand and power tooling appropriate to

<b>EVIDENCE GUIDE</b>	
	servicing and repair of reciprocating cutting systems <ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Reciprocating cutting systems</b>	Reciprocating cutting systems may include: <ul style="list-style-type: none"> <li>• electric or petrol driven hedge trimmers</li> <li>• double sided or single sided blades</li> <li>• tree loppers and power shears, which may be</li> </ul>

<b>RANGE STATEMENT</b>	
	electric, air, hydraulic or petrol driven
<b>Servicing and repair methods</b>	<p>Servicing and repair methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing and repair</li> <li>• inspection, repair and replacement of components</li> <li>• replacing tungsten-tipped and steel blades and disks</li> <li>• sharpening blades and angles</li> <li>• repairing impact and overload protection device</li> <li>• completing cutting system adjustment</li> <li>• lubricating</li> <li>• testing of repaired unit</li> <li>• communicating with customers</li> <li>• documenting and reporting on service and repair</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• equipment/floor stands</li> <li>• specific service/repair and general workshop equipment and tooling</li> <li>• sharpening equipment</li> <li>• exhaust gas extraction system</li> <li>• lubricating equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts and blades</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing and repairing reciprocating cutting systems</li> <li>• regulatory/legislative requirements pertaining to reciprocating cutting systems</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>requirements</p> <ul style="list-style-type: none"> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• regulations, including Australian Standards</li><li>• internal organisational quality policies and procedures</li><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian Standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURPTA2010 Service pumping systems

### Modification History

Release	Comment
Release 1	Replaces AURP247670B Service pumping systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to carry out testing and servicing of centrifugal and positive displacement pumping systems for outdoor power equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing of pumping systems in the outdoor power equipment industry.</p> <p>Pumping systems include centrifugal pumps as used for firefighting, irrigation and water transfer, high-pressure piston pumps as used in pressure cleaners and diaphragm pumps as used in orchard spraying.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake test	1.1. Confirm nature and scope of work requirements 1.2. Identify and source procedures, information and tooling required 1.3. Analyse method options, select those most appropriate to the circumstances and make preparations 1.4. Source technical and/or calibration requirements for testing and prepare support equipment 1.5. Identify chemical cleaning agents, their safe handling and disposal methods in accordance with environmental requirements
2. Conduct test and analyse results	2.1. Observe workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and personal protection needs, throughout the work 2.2. Carry out tests in accordance with workplace procedures and manufacturer/component supplier specifications 2.3. Compare test results with specifications to indicate compliance or non-compliance 2.4. Document results with evidence and supporting information and make recommendations 2.5. Forward report to persons for action in accordance with workplace procedures
3. Prepare for service operation	3.1. Confirm work to be carried out 3.2. Access and interpret service procedures, workshop manuals and manufacturer information 3.3. Identify and prepare tools, equipment and materials required for servicing job 3.4. Set up work area
4. Service pumping system	4.1. Identify and observe applicable WHS requirements, including state/territory regulatory requirements and personal protection needs 4.2. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 4.3. Service pump system following manufacturer/component supplier recommended procedures and specifications 4.4. Complete service operations without causing damage

ELEMENT	PERFORMANCE CRITERIA
	to any vehicle/machine or component
5. Complete work and return unit to customer	<p>5.1. Complete service schedule documentation and update customer and warranty information as required</p> <p>5.2. Inspect serviced unit to ensure protective guards, cowlings and safety features are in place</p> <p>5.3. Clean unit to workplace expectations</p> <p>5.4. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures</p> <p>5.5. Provide customer report on service and explain use and care of equipment and warranty requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to testing and servicing pumping systems
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess test results, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles of positive and non-positive displacement pumping systems
- classifications of pumping systems and components
- types and causes of problems in pumping systems
- types and layout of service/repair manuals (hard copy and electronic)
- pump system service procedures
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing pumping systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing pumping systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret test results
- conduct testing and servicing in accordance with workplace and manufacturer/component supplier requirements
- complete servicing of pumping systems and associated components within workplace timeframes
- present serviced pumping system to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of pumping systems and components
  - materials relevant to servicing of pumping systems
  - equipment, hand and power tooling appropriate to servicing of pumping systems
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Pumping systems**

Pumping systems may include:

- centrifugal pumps as used for fire fighting, irrigation and water transfer
- high-pressure piston pumps as used in pressure cleaners
- diaphragm pumps as used in orchard spraying

**RANGE STATEMENT****Pump system variables**

Pump system variables may include:

- heating devices as found in hot pressure washes
- high-pressure low volume centrifugal
- low-pressure high volume centrifugal
- vane, rotor, piston and gear pumps

**Servicing methods**

Servicing methods may include:

- on- and off-site servicing and repair
- inspection and replacement of seals, filters and components
- adjustments
- testing of unit for pressure, suction and discharge
- communicating with customers
- documenting and reporting on service and replacement

**Tooling and equipment**

Tooling and equipment may include:

- specific service/repair and general workshop equipment and tooling
- pressure gauges
- flow meters
- cleaning equipment

**Materials**

Materials may include:

- spare parts
- lubricants
- cleaning materials

**Information/documents**

Information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- safe work procedures related to servicing pumping systems
- regulatory/legislative requirements pertaining to pumping systems
- engineer's design specifications and instructions
- organisation work specifications and

<b>RANGE STATEMENT</b>	
	<p>requirements</p> <ul style="list-style-type: none"> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• regulations, including Australian standards</li><li>• internal organisational quality policies and procedures</li><li>• enterprise operations and procedures</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURPTA3011 Repair pumping systems

### Modification History

Release	Comment
Release 1	Replaces AURP347666B Repair pumping systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to carry out testing and repair of centrifugal and positive displacement pumping systems for outdoor power equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake testing and repair of pumping systems in the outdoor power equipment industry.</p> <p>Pumping systems include centrifugal pumps as used for firefighting, irrigation and water transfer, high-pressure piston pumps as used in pressure cleaners, and diaphragm pumps as used in orchard spraying.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake test	1.1. Confirm nature and scope of work requirements 1.2. Identify and source procedures, information and tooling required 1.3. Analyse method options, select those most appropriate to the circumstances and make preparations 1.4. Source technical and/or calibration requirements for testing and prepare support equipment 1.5. Identify chemical cleaning agents, their safe handling and disposal methods with respect to environmental requirements
2. Conduct test and analyse results	2.1. Observe workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and personal protection needs, throughout the work 2.2. Carry out tests in accordance with workplace procedures and manufacturer/component supplier specifications 2.3. Compare test results with specifications to indicate compliance or non-compliance 2.4. Document results with evidence and supporting information and make recommendations 2.5. Process report or forward to persons for action in accordance with workplace procedures
3. Prepare for repair operation	3.1. Confirm work to be carried out 3.2. Plan repair operation, including post-repair testing 3.3. Access and interpret service procedures, workshop manuals and manufacturer information 3.4. Identify and prepare tools, equipment and materials required for servicing job 3.5. Set up work area
4. Repair pumping system	4.1. Identify and observe applicable WHS requirements, including state/territory regulatory requirements and personal protection needs 4.2. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 4.3. Repair pump system following manufacturer/component supplier recommended procedures and specifications

ELEMENT	PERFORMANCE CRITERIA
	<p>4.4. Complete repair operations without causing damage to any vehicle/machine or component</p> <p>4.5. Make necessary adjustments in accordance with manufacturer/component supplier specifications</p>
5. Complete work and return unit to customer	<p>5.1. Complete repair schedule documentation and update customer and warranty information as required</p> <p>5.2. Inspect repaired unit to ensure protective guards, cowlings and safety features are in place</p> <p>5.3. Clean unit to workplace expectations</p> <p>5.4. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures</p> <p>5.5. Provide customer report on repair and explain use and care of equipment and warranty requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

##### Required skills include:

- technical skills to the level required to use workplace technology and tools related to testing and repairing pumping systems
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess test results, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

##### Required knowledge includes:

- operating principles of positive and non-positive displacement pumping systems
- chemical cleaning agents and HAZCHEM warnings
- identification of the unit application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- types, characteristics, uses and limitations of centrifugal and positive displacement pumps
- pressure and force and their relationship to each other
- types and causes of problems in pumping systems
- types and layout of service/repair manuals (hard copy and electronic)
- pump system service procedures
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and

**REQUIRED SKILLS AND KNOWLEDGE**

codes of practice, including WHS and environment, relevant to testing and repairing pumping systems

- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to testing and repairing pumping systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- identify the application, purpose and operation of the pumping system
- select testing and repair methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret test results
- conduct testing and repairs in accordance with workplace and manufacturer/component supplier requirements
- follow correct handling and disposal procedures for chemical cleaning agents
- present repaired pumping system to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of pumping systems and components
  - materials relevant to testing and repair of pumping systems
  - equipment, hand and power tooling appropriate to

<b>EVIDENCE GUIDE</b>	
	testing and repair of pumping systems <ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Pumping systems</b>	Pumping systems may include: <ul style="list-style-type: none"> <li>• centrifugal pumps as used for firefighting, irrigation and water transfer</li> <li>• high-pressure piston pumps as used in</li> </ul>

<b>RANGE STATEMENT</b>	
	pressure cleaners <ul style="list-style-type: none"> <li>• diaphragm pumps as used in orchard spraying</li> </ul>
<b>Pump system variables</b>	Pump system variables may include: <ul style="list-style-type: none"> <li>• heating devices as found in hot pressure washes</li> <li>• high-pressure low volume centrifugal</li> <li>• low-pressure high volume centrifugal</li> <li>• vane, rotor, piston and gear pumps</li> </ul>
<b>Servicing methods</b>	Servicing methods may include: <ul style="list-style-type: none"> <li>• on- and off-site testing and repair</li> <li>• isolation of faults, including internal and external leakage</li> <li>• dismantling, inspection and evaluation</li> <li>• replacement of components parts</li> <li>• assembly and completion of operational tests</li> <li>• adjustments</li> <li>• testing of unit for pressure, suction and discharge</li> <li>• communicating with customers</li> <li>• documenting and reporting on repairs and tests</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• specific service/repair and general workshop equipment and tooling</li> <li>• pressure gauges</li> <li>• flow meters</li> <li>• cleaning equipment</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to testing and repairing pumping systems</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• regulatory/legislative requirements pertaining to pumping systems</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURPTE2002 Service engines and engine components (outdoor power equipment)

### Modification History

Release	Comment
Release 1	Replaces AURP201570B Service engines and engine components (outdoor power equipment)  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to service small engines and engine components appropriate to outdoor power equipment.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake servicing of outdoor power equipment engines which may be stationary or mobile, air and liquid cooled, overhead and side valve, 2- and 4-stroke spark ignition and 4-stroke compression ignition engines.  For service and repair of light/heavy vehicle engines refer to AURTTE2004 Inspect and service engines.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for engine service	1.1. Identify and confirm work to be carried out 1.2. Access and interpret service procedures, workshop manuals and manufacturer information 1.3. Identify and prepare tools, equipment and materials required for servicing job 1.4. Set up work area
2. Service engines and engine components	2.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 2.2. Perform service operations in accordance with workplace procedures and manufacturer/component supplier specifications 2.3. Apply appropriate lubricants to engine 2.4. Start engine and run up to operating temperature and check for leaks, abnormal noises and pressures, where applicable 2.5. Make any adjustments as required and re-test 2.6. Complete workplace documentation and update customer and warranty information, as required
3. Complete work	3.1. Inspect serviced unit to ensure protective guards, cowlings and safety features are in place 3.2. Clean engine to workplace expectations 3.3. Clean work area, dispose of waste and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to servicing outdoor power equipment engines
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- construction and operating principles of 2- and 4-stroke spark ignition engines and 4-stroke compression ignition engines
- types and layout of service/repair manuals (hard copy and electronic)
- servicing procedures
- different servicing requirements for different engines
- minor adjustment procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing engines in outdoor power equipment
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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servicing engines in outdoor power equipment
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## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• communicate effectively with others involved in or affected by the work</li> <li>• select servicing methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• service of a range of engines and associated components to workplace and manufacturer/component supplier requirements</li> <li>• complete servicing of engine and associated components within workplace timeframes</li> <li>• complete workplace records.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.</li> <li>• Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</li> <li>• Assessment is to comply with relevant regulatory requirements, including specified Australian standards.</li> <li>• Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• a range of outdoor power equipment engines and components</li> <li>• materials relevant to servicing engines</li> <li>• equipment, hand and power tooling appropriate to servicing of outdoor power equipment engines</li> <li>• specifications and work instructions.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> </ul>

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Outdoor power equipment engines**

Outdoor power equipment engines may include:

- stationary or mobile
- air and liquid cooled
- overhead and side valve
- 2- and 4-stroke spark ignition
- 4-stroke compression ignition

**Servicing methods**

Servicing methods may include:

- on- and off-site servicing

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• minor adjustments</li> <li>• lubricating</li> <li>• communicating with customers</li> <li>• documenting and reporting on service</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specific service and general workshop equipment and tooling</li> <li>• measuring equipment</li> <li>• lubricating equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing engines</li> <li>• regulatory/legislative requirements pertaining to outdoor power equipment</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and</li> </ul>

<b>RANGE STATEMENT</b>	
	substances <ul style="list-style-type: none"> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include: <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> </ul>

<b>RANGE STATEMENT</b>
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|  | <ul style="list-style-type: none"><li>• reporting and recording procedures</li></ul> |
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## Unit Sector(s)

Unit sector	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURPTE3003 Repair engines and engine components (outdoor power equipment)

### Modification History

Release	Comment
Release 1	Replaces AURP301566B Repair engines and engine components (outdoor power equipment)  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to repair small engines and engine components appropriate to outdoor power equipment.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake repair of outdoor power equipment engines which may be stationary or mobile, air and liquid cooled, overhead and side valve, 2- and 4-stroke spark ignition and 4-stroke compression ignition engines.  For service and repair of light/heavy vehicle engines refer to AURLTE3002 Repair engines and associated engine components (light vehicle)  or  AURHTE3002 Repair engines and associated engine components (heavy vehicle)
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to repair engine	1.1. Identify and confirm work to be carried out 1.2. Access and interpret repair procedures, workshop manuals and manufacturer information 1.3. Identify and prepare tools, equipment and materials required for repair operations 1.4. Set up work area
2. Repair engine and engine components	2.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 2.2. Dismantle engine and components and inspect for wear and damage 2.3. Perform repair operations in accordance with workplace procedures and manufacturer/component supplier specifications 2.4. Assemble engine within manufacturer/component supplier specifications and tolerances 2.5. Apply appropriate lubricants to engine 2.6. Start engine and run up to operating temperature and check for leaks, abnormal noises and pressures where applicable 2.7. Make any adjustments as required and re-test 2.8. Complete workplace documentation and update customer and warranty information as required
3. Complete work	3.1. Inspect repaired unit to ensure protective guards, cowlings and safety features are in place 3.2. Clean engine to workplace expectations 3.3. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to repairing outdoor power equipment engines
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- construction and operating principles of two and four stroke spark ignition engines and four stroke compression ignition engines
- types and layout of service/repair manuals (hard copy and electronic)
- repair procedures and methodologies
- different repair requirements for different engines
- testing and adjustment procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications and tolerances
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to repairing engines in outdoor power equipment
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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repairing engines in outdoor power equipment
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select repair methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- complete repairs to a range of engines and associated components to workplace and manufacturer/component supplier requirements
- complete repair of engine and associated components within workplace timeframes
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of outdoor power equipment engines and components
  - materials relevant to repairing engines
  - equipment, hand and power tooling appropriate to repairing of outdoor power equipment engines
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Outdoor power equipment engines**

Outdoor power equipment engines may include:

- stationary or mobile
- air and liquid cooled
- overhead and side valve
- 2- and 4-stroke spark ignition
- 4-stroke compression ignition

**Repair methods**

Repair methods may include:

- on- and off-site repairs

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• engine dismantling and reassembly</li> <li>• repair and replacement of components</li> <li>• testing and adjustments</li> <li>• lubricating</li> <li>• communicating with customers</li> <li>• documenting and reporting on service</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specialist and general workshop equipment and tooling</li> <li>• measuring equipment</li> <li>• tuning equipment</li> <li>• tensioning equipment</li> <li>• lubricating equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• gaskets and sealant</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to repairing engines</li> <li>• regulatory/legislative requirements pertaining to repairing engines</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>



## Unit Sector(s)

Unit sector	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURPTE4004 Overhaul engines and engine components (outdoor power equipment)

### Modification History

Release	Comment
Release 1	Replaces AURP401245B Overhaul engines and engine components (outdoor power equipment)  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to overhaul small engines and engine components appropriate to outdoor power equipment.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the overhaul of outdoor power equipment engines, which may be stationary or mobile, air and liquid cooled, overhead and side valve, 2- and 4-stroke spark ignition and 4-stroke compression ignition engines. The work includes rebuilding or replacement of out-of-specification parts.  For overhaul of light/heavy vehicle engines refer to AURTTE4005 Overhaul engines and associated engine components.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul engine	1.1. Identify and confirm work to be carried out 1.2. Access and interpret repair procedures, workshop manuals and manufacturer's information 1.3. Identify and prepare tools, equipment and materials required for repair operations 1.4. Set up work area
2. Dismantle and inspect engine and components	2.1. Identify and observe applicable workplace health and safety (WHS) requirements, including state/territory regulatory requirements and personal protection needs 2.2. Dismantle engine in a logical sequence 2.3. Complete dismantling operation without causing damage to components or system 2.4. Clean and arrange components ready for inspection 2.5. Access and interpret relevant information from manufacturer/component supplier specifications and repair/reclaim methods 2.6. Measure components and compare against manufacturer/component supplier specifications and tolerances 2.7. Make decisions as to serviceability and repair method of each component 2.8. Source replacement parts, as required 2.9. Identify and arrange outsourcing of third-party repair
3. Overhaul and assemble engine and engine components	3.1. Perform repair, rebuild or replacement operations in accordance with workplace procedures and manufacturer/component supplier specifications and tolerances 3.2. Assemble engine following manufacturer/component supplier procedures 3.3. Measure running clearances against manufacturer/component supplier specifications and make necessary adjustments 3.4. Apply appropriate lubricants to engine 3.5. Complete assembly within timeframe and without causing damage to components or system
4. Check engine operation	4.1. Securely mount engine in preparation for starting 4.2. Check engine fluid levels, including lubrication and coolant

ELEMENT	PERFORMANCE CRITERIA
	<p>4.3. Check gauges and warning devices for operation prior to starting</p> <p>4.4. Start engine and run up to operating temperature and check for leaks, abnormal noises and pressures where applicable</p> <p>4.5. Make any adjustments as required and re-test</p> <p>4.6. Complete workplace documentation and update customer and warranty information as required</p>
5. Complete work	<p>5.1. Seal engine orifices against ingress of foreign matter</p> <p>5.2. Inspect repaired unit to ensure protective guards, cowlings and safety features are in place</p> <p>5.3. Clean and store engine to workplace expectations</p> <p>5.4. Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools, including specialist tooling, measuring equipment and computerised technology related to overhauling outdoor power equipment engines
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to research, interpret and apply manufacturer/component supplier information, procedures and specifications
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities, to establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to interpret test results and develop creative solutions
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- construction and operating principles of 2- and 4-stroke spark ignition engines and 4-stroke compression ignition engines
- types and layout of service/repair manuals (hard copy and electronic)
- overhaul procedures and methodologies
- component evaluation methods
- different repair requirements for different engines
- testing and adjustment procedures
- types of lubricants, application and methods of lubrication
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications and tolerances
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to overhauling engines in outdoor power equipment
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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overhauling engines in outdoor power equipment
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select overhaul methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- dismantle, evaluate, assemble, adjust, measure and test engines and components in accordance with workplace requirements and manufacturer/component supplier requirements
- complete overhaul of a range of engines and associated components within workplace guidelines and timeframes
- present repaired equipment to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of outdoor power equipment engines and components
  - materials relevant to overhauling engines
  - equipment, hand and power tooling appropriate to overhauling of outdoor power equipment engines

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Outdoor power equipment engines</b>	<p>Outdoor power equipment engines may include:</p> <ul style="list-style-type: none"> <li>• stationary or mobile</li> <li>• air and liquid cooled</li> <li>• overhead and side valve</li> <li>• 2- and 4-stroke spark ignition</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 4-stroke compression ignition</li> </ul>
<b>Engine faults</b>	<p>Engine faults may include:</p> <ul style="list-style-type: none"> <li>• component wear</li> <li>• bearing and piston clearances</li> <li>• ring gap</li> <li>• valve train wear</li> <li>• crankshaft end float</li> <li>• engine compression</li> <li>• cylinder leakage</li> </ul>
<b>Overhaul methods</b>	<p>Overhaul methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• complete dismantling of component parts</li> <li>• replacement, repair, rebuild, or reconditioning of parts comparable to original parts</li> <li>• assembly of components</li> <li>• functional testing and adjustments</li> <li>• lubricating</li> <li>• communicating with customers</li> <li>• documenting and reporting on overhaul</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specialist and general workshop equipment and tooling</li> <li>• measuring equipment</li> <li>• tuning equipment</li> <li>• tensioning equipment</li> <li>• lubricating equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• gaskets, sealant</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to overhauling</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>engines</p> <ul style="list-style-type: none"> <li>• regulatory/legislative requirements pertaining to overhauling engines</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
Quality requirements	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
Organisational policies and procedures	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

Unit sector	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURPTR2002 Test and service outdoor electric powered equipment

### Modification History

Release	Comment
Release 1	<p>Replaces AURE222976B Test and service outdoor electric powered equipment</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to carry out testing and servicing of outdoor electric powered equipment, including shears, blowers, shredders and mulchers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake testing and servicing of outdoor electric powered equipment.</p> <p>The testing and servicing of 240 V portable generators is covered by the unit AURPTR3001 Test and service 240 V portable generators.</p> <p>Where state/territory legislation requires a Restricted Electrical Licence (REL) or other such requirement to undertake work on electric 240 V, the appropriate units of competency from the UEE11 Electrotechnology or MEM05 Metal and Engineering Training Packages should be sourced as electives.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for test	1.1. Confirm nature and scope of work requirements 1.2. Identify and source procedures, information and tooling required 1.3. Analyse method options, select those most appropriate to the circumstances and make preparations 1.4. Source technical and/or calibration requirements for testing and prepare support equipment
2. Conduct test and analyse results	2.1. Observe workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and personal protection needs, throughout the work 2.2. Observe warnings in relation to working with 240 V 2.3. Carry out load test in accordance with workplace procedures and manufacturer/component supplier specifications 2.4. Compare test results with specifications to indicate compliance or non-compliance 2.5. Document results with evidence and supporting information and make recommendations 2.6. Forward report to persons for action in accordance with workplace procedures
3. Prepare to service equipment	3.1. Confirm work to be carried out 3.2. Access and interpret service procedures, workshop manuals and manufacturer's information 3.3. Identify and prepare tools, equipment and materials required for servicing job 3.4. Set up work area
4. Carry out equipment service	4.1. Service equipment following manufacturer/component supplier recommended procedures and specifications 4.2. Make minor adjustments during the service in accordance with manufacturer/component supplier specifications 4.3. Replace electronic module, as required
5. Prepare equipment for delivery to customer	5.1. Complete service schedule documentation and update customer and warranty information, as required 5.2. Inspect serviced unit to ensure protective guards,

ELEMENT	PERFORMANCE CRITERIA
	<p>cowlings and safety features are in place</p> <p>5.3.Clean unit to workplace expectations</p> <p>5.4.Clean work area, dispose of waste, and store tools and equipment in accordance with workplace procedures</p> <p>5.5.Provide customer report on service and explain use and care of equipment and warranty requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to testing and servicing electric powered equipment
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess test results, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- dangers of working with 240 V equipment
- WHS regulations/requirements, equipment, material and personal safety requirements
- volts, amperage and power and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- electrical testing procedures
- equipment servicing procedures
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to testing and servicing electric powered equipment
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to

**REQUIRED SKILLS AND KNOWLEDGE**

testing and servicing electric powered equipment

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- accurately interpret test results
- complete preparatory activity in a systematic manner
- conduct the testing in accordance with workplace requirements
- complete servicing to manufacturer/component supplier requirements
- present equipment to customer in compliance with workplace requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of electric powered equipment and components
  - materials relevant to testing and servicing of outdoor electric powered equipment
  - equipment, hand and power tooling appropriate to

<b>EVIDENCE GUIDE</b>	
	testing and servicing of electric powered equipment <ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Outdoor power equipment</b>	Outdoor power equipment may include: <ul style="list-style-type: none"> <li>• shears, blowers, blower vacs, shredders and mulchers, which may be electric or power</li> </ul>

<b>RANGE STATEMENT</b>	
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<b>Servicing methods</b>	<p>Servicing may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing and repair</li> <li>• inspection and replacement of components</li> <li>• adjustments</li> <li>• communicating with customers</li> <li>• documenting and reporting on service and replacement</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specific service/repair and general workshop equipment and tooling</li> <li>• multimeter and electrical testing equipment</li> <li>• cleaning equipment</li> <li>• ear muffs and safety glasses</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to testing and servicing electric powered equipment</li> <li>• regulatory/legislative requirements pertaining to testing and servicing electric powered equipment</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• electrical safety</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Outdoor Power Equipment
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## AURPTR3001 Test and service 240V portable generators

### Modification History

Release	Comment
Release 1	<p>Replaces AURP322776B Test and service 240V portable generators</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing / Regulatory Information updated</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to carry out load testing and servicing of portable power generators rated at 240V output.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing of small portable generators in the outdoor power equipment industry.</p> <p>Portable generators include small 240V units that are used for recreational and professional purposes. Testing and servicing relates only to the 240V generator and not the engine driving the generator.</p>
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## Licensing/Regulatory Information

Where state/territory legislation requires a Restricted Electrical Licence (REL) or other such requirement to undertake work on power generation of 240V output, units of competency from the UEE11 Electrotechnology Training Package or the MEM05 Metal and Engineering Training Package should be sourced as electives.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake load test	1.1. Confirm nature and scope of work requirements 1.2. Identify and source procedures, information and tooling required 1.3. Analyse method options, select those most appropriate to the circumstances and make preparations 1.4. Source technical and/or calibration requirements for load testing and prepare support equipment
2. Conduct test and analyse results	2.1. Observe workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and personal protection needs, throughout the work 2.2. Observe warnings in relation to working with 240V 2.3. Carry out load test in accordance with workplace procedures and manufacturer/component supplier specifications 2.4. Compare test results with specifications to indicate compliance or non-compliance 2.5. Document results with evidence and supporting information and make recommendations 2.6. Forward report to persons for action in accordance with workplace procedures
3. Prepare for service operation	3.1. Confirm work to be carried out 3.2. Access and interpret service procedures, workshop manuals and manufacturer's information 3.3. Identify and prepare tools, equipment and materials required for servicing job 3.4. Set up work area
4. Service generator	4.1. Identify and observe applicable WHS requirements, including state/territory regulatory requirements and personal protection needs 4.2. Select tooling and equipment to meet job requirements and check to ensure they are in good working order 4.3. Service generator following manufacturer/component supplier recommended procedures and specifications
5. Complete work and return unit to	5.1. Complete service schedule documentation and update customer and warranty information as

ELEMENT	PERFORMANCE CRITERIA
customer	<p>required</p> <p>5.2. Inspect serviced unit to ensure protective guards, cowlings and safety features are in place</p> <p>5.3. Clean unit to workplace expectations</p> <p>5.4. Clean work area, dispose of waste and store tools and equipment in accordance with workplace procedures</p> <p>5.5. Provide customer report on service and explain use and care of equipment and warranty requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to testing and servicing portable generators
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier information, workplace policies and procedures
- numeracy skills to the level required to correctly calculate time, assess test results, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- dangers of working with 240V equipment
- volts, amperage, wattage, frequency (hertz) and power generation and their relationship to each other
- identification of portable generator application, purpose and operating principles
- resistive load testing procedures
- classifications of portable generators and components
- types and causes of problems in portable generators
- types and layout of service/repair manuals (hard copy and electronic)
- portable generator service procedures
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to testing and servicing portable generators

**REQUIRED SKILLS AND KNOWLEDGE**

- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to testing and servicing portable generators

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- identify generator application, purpose and operating principles
- conduct inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- accurately interpret test results
- service a range of generators to manufacturer/component supplier requirements
- present serviced generator to customer in compliance with workplace requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of portable generators and components
  - materials relevant to testing and servicing of generators

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• equipment, hand and power tooling appropriate to testing and servicing of generators</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Portable generators</b>	<p>Portable generator types may include:</p> <ul style="list-style-type: none"> <li>• inverter</li> <li>• cyclo-converter</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• standard</li> <li>• bobbin</li> <li>• condenser</li> </ul>
<b>Testing</b>	<p>Testing relates only to the 240V generator and not the engine driving the generator, and may include:</p> <ul style="list-style-type: none"> <li>• AC output voltage and frequency</li> <li>• brush and battery voltage</li> <li>• resistive load testing</li> <li>• engine speed</li> <li>• rotor magnet</li> <li>• circuit breaker</li> </ul>
<b>Servicing methods</b>	<p>Servicing relates only to the 240V generator and not the engine driving the generator and may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site servicing and repair</li> <li>• inspection and replacement of components</li> <li>• adjustments</li> <li>• communicating with customers</li> <li>• documenting and reporting on service and replacement</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specific service/repair and general workshop equipment and tooling</li> <li>• meters and gauges</li> <li>• circuit tester and load testing device</li> <li>• load appliances and equipment</li> <li>• cleaning equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to testing and servicing portable generators</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• regulatory/legislative requirements pertaining to testing and servicing portable generators</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• electrical safety</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements may include: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Outdoor Power Equipment
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURREA2001 Apply environmental and sustainability best practice in a marine workplace

### Modification History

Release	Comment
Release 1	Replaces AURR271103A Apply environmental regulations in the marine service industry Performance Criteria updated to reflect sustainability

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to identify and apply environmental regulations and sustainability best practice to work safely and avoid potential environmental hazards in the maintenance and service of marine vessels.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work involves the theory, knowledge and application of skills related to environmental regulations and sustainability best practice in a marine workplace while maintaining and servicing marine vessels.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in undertaking environmentally sound work practices.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and apply environment regulations	<p>1.1.Reasons for <i>ethical environmental practice</i> in an marine mechanical workplace are identified</p> <p>1.2.Environmental responsibilities and penalties for individual breaches of legislation and regulations are identified</p> <p>1.3.<i>Documents and procedures</i> relevant to environmental safety and <i>hazards</i> are located and determined</p> <p>1.4.<i>Safety equipment and other material</i> necessary to support environmentally sound practices are identified and sourced</p>
2. Identify and avoid hazards to water, foreshores and marine environments	<p>2.1.Wastewater or <i>contaminants</i> are contained to restrict entry to water systems, foreshores or marine environments</p> <p>2.2.Vessel and component maintenance, service and repair is undertaken in an environmentally responsible manner to avoid hazards to water systems, foreshores and marine environments</p> <p>2.3.Preparation areas are checked to ensure accidental spillage cannot escape into water systems, foreshores and marine environments</p> <p>2.4.Spill kit is identified and located in preparation to prevent damage to the marine environment</p> <p>2.5.Waste containment areas are identified and inspected to avoid contamination of the surrounding area</p>
3. Identify and avoid hazards to air quality	<p>3.1.Hazardous airborne particles, including anti-foulant are identified, minimised and contained</p> <p>3.2.Hazardous gases and fumes are identified, minimised and contained</p> <p>3.3.Clean-up of guns, general tools, equipment and spray and painting equipment is conducted in an environmentally safe manner</p>
4. Identify and avoid noise hazards	<p>4.1.Hazardous noise activities are identified, prevented, reduced and contained</p> <p>4.2.Hazardous noise activities are carried out within approved operating hours and regulations</p>
5. Identify and apply sustainability best practice	<p>5.1.<i>Sustainability best practice</i> is identified and applied to minimise waste and potential damage to the environment according to workplace policies and procedures</p> <p>5.2.Methods to reduce resource consumption (water, electricity, fossil fuels, chemicals) are identified and applied</p> <p>5.3.Environmental damage and breaches of environmental regulations are reported</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow oral instructions
  - communicate verbal and written ideas and information as they relate to environmental regulations and sustainability best practice of a marine mechanical workplace
- initiative and enterprise to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - identify and apply workplace environmental procedures
  - read and apply environmental regulations for a marine mechanical workplace
- numeracy skills to measure and calculate length, area and volume
- planning and organising skills to:
  - identify risk factors and actions to minimise risk
  - identify planning, checking and inspection techniques to avoid environmental contamination and wastage
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - identify processes which contribute to improvements for sustainability best practice
- self-management skills to:
  - identify appropriate safety and environmental response equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to:
  - collaborate and cooperate with other team members relating to environmental and sustainability issues
- technical skills to:
  - collect, organise and interpret technical information relating to recognising workplace situations that are potentially harmful to the environment
  - use spill kits
- technology skills to:
  - use workplace environmental and safety-related technology to assist with clean and safe work practices

#### Required knowledge

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- effects of pollution and methods to minimise it
- environmental regulations and their implications for work being undertaken in a marine mechanical service and repair workplace
- characteristics and potential environmental impact of products used in the maintenance, repair and service of marine vessels, components and electrical systems
- philosophy of prevention, reuse, reduce, recycle
- awareness of the environmental effects of chemicals and contaminants on the marine environment
- procedures for use of spill kit
- reporting procedures for environmental damage and breaches of environmental regulations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- apply environmental regulations and sustainability best practice in a marine mechanical service and repair workplace
- identify materials used in an marine mechanical workplace and assess their potential environmental impact
- use a spill kit
- report environmental damage and breaches of environmental regulations.

#### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- access to environmental legislation, regulations and best practice models including access to workplace documents and reference images
- access to a marine maintenance and service workplace or simulated environment that accurately reflects workshop working conditions, including conditions for the removal and application of anti-foulants, recycling bins, liquid, sludge and

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

solid wastes

- access to PPE and other equipment of the type intended to be used in response to an environmental incident or accident.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of an holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Ethical environmental practice</i></b> may include:	<ul style="list-style-type: none"> <li>• correct disposal methods for waste and cleaning and/or washing of internal and external surfaces, glass surfaces and wet areas</li> <li>• painting with anti-foulant based products</li> <li>• compliance with legislative obligations</li> <li>• hazardous materials handling best practice applications</li> <li>• organisation insurance requirements</li> <li>• discretion, judgement and problem-solving skills in undertaking environmentally sound work practices.</li> </ul>
<b><i>Documents and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• environmental legislation</li> <li>• health regulations</li> <li>• hazardous substances register</li> <li>• site environmental policy</li> <li>• workplace environmental procedures and safety instructions</li> <li>• dangerous goods code safe operating procedures.</li> </ul>
<b><i>Hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• toxic fumes and substances</li> <li>• flammable materials and fire hazards</li> <li>• spillages</li> <li>• waste and debris especially on floors, ladders, trolleys</li> <li>• electricity and water</li> <li>• toxic substances</li> <li>• damaged packing material or containers</li> <li>• broken or damaged equipment</li> <li>• unsafe lifting practices.</li> </ul>
<b><i>Safety equipment and other material</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective equipment (PPE) including: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• hearing protection</li> <li>• gloves</li> <li>• other suitable protective clothing</li> <li>• safety footwear</li> </ul> </li> <li>• spill kit</li> <li>• absorbent materials</li> <li>• drip and catchment trays</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>waste bags</li> <li>waste segregation systems</li> </ul>
<b><i>Contaminants</i></b> may include:	<ul style="list-style-type: none"> <li>solid or liquid wastes</li> <li>oil, fuel and grease</li> <li>hydrocarbon based degreasing agents and solvents</li> <li>acids</li> <li>alkaline wastes</li> <li>tributyltin, arsenic, mercury and DDT</li> <li>paint, lacquer, varnish</li> <li>anti-foulant based products</li> <li>glues and adhesive compounds</li> <li>household chemicals and pesticides.</li> </ul>
<b><i>Sustainability best practice</i></b> may include:	<ul style="list-style-type: none"> <li>recycling waste</li> <li>energy conservation practices</li> <li>natural resources (water, etc.) conservation practices</li> <li>reusing</li> <li>environmental (green) purchasing practices</li> <li>noise minimisation.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Marine
<b>Unit sector</b>	Environment

## Custom Content Section

Not applicable.

## AURREA3002 Monitor environmental and sustainability best practice in the marine mechanical industry

### Modification History

Release	Comment
Release 1	Replaces AURR371181A Implement and monitor environmental regulations in the marine repair industry Performance Criteria updated to reflect sustainability

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to monitor environmental regulations and sustainability best practice whilst undertaking the repair, maintenance and installation of marine craft engines and or components and electrical systems in a manner that ensures the protection of the environment in the marine repair industry.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work involves the theory, knowledge and application of skills related to environmental regulations and sustainability best practice in the marine repair industry.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply and monitor environment regulations	<p>1.1.Reasons for <i>ethical environmental practice</i> in an marine workplace are identified</p> <p>1.2.Environmental responsibilities and penalties for individual breaches of legislation and regulations are identified</p> <p>1.3.<i>Documents and procedures</i> relevant to environmental safety and <i>hazards</i> are applied</p> <p>1.4.<i>Safety equipment and other material</i> necessary to support environmentally sound practices are identified and sourced</p>
2. Monitor and avoid contamination to water systems and marine environments	<p>2.1.Wastewater or <i>contaminants</i> are contained to restrict entry to water systems, foreshores or marine environments</p> <p>2.2.Vessel and component maintenance, service and repair is undertaken in an environmentally responsible manner to avoid hazards to water systems, foreshores and marine environments</p> <p>2.3.Engine and component cleaning is carried out in an area that is bunded or graded to a collection pit</p> <p>2.4.All preparation areas, in particular anti-foulant paint preparation, is bunded and under cover to ensure accidental spillage cannot escape into water systems, foreshores and marine environments</p> <p>2.5.All components containing environmentally hazardous material are stored undercover in a sealed and bunded area</p> <p>2.6.Liquid wastes are drained into appropriate storage or recycling containers</p> <p>2.7.Bilge water is disposed of in an appropriate manner</p> <p>2.8.Spill kit is located and used as needed and disposed of as controlled waste by a licensed contractor to prevent water, foreshore pollution and damage to the marine environment</p> <p>2.9.Spills are cleaned up immediately and the workplace is kept clean to prevent unintentional pollution to water, foreshores and the marine environment</p>
3. Monitor and avoid hazards to air quality	<p>3.1.Welding, soldering and thermal cutting is conducted in a well-ventilated area</p> <p>3.2.Hazards of airborne particles are monitored, minimised and contained</p> <p>3.3.Hazards of gases are identified, monitored and contained</p> <p>3.4.Clean-up of guns and general tools and equipment is conducted in an environmentally safe manner</p>
4. Monitor and avoid noise hazards	<p>4.1.Hazardous noise activities are monitored, prevented, reduced and contained</p>

	4.2. Hazardous noise activities are carried out within approved operating hours and regulations
5. Monitor and apply sustainability best practice	<p>5.1. <i>Sustainability best practice</i> is monitored and applied to minimise waste and potential damage to the environment according to workplace policies and procedures</p> <p>5.2. Methods to reduce resource consumption (water, electricity, fossil fuels, chemicals) are monitored and applied</p> <p>5.3. Environmental damage and breaches of environmental regulations are monitored and recorded</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - communicate ideas and information (verbal and written) relating to the monitoring of environmental regulations and sustainability best practice for a marine mechanical workplace
- initiative and enterprise to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - interpret and monitor marine mechanical workplace environmental procedures
  - read and apply environmental regulations for a marine workplace
  - record environmental damage and breaches of environmental regulations
- numeracy skills to:
  - interpret instruments, gauges and other recording equipment
  - measure and calculate length, area and volume
- planning and organising skills to:
  - identify risk factors and actions to minimise risk
  - identify planning, checking and inspection techniques to avoid environmental contamination and wastage
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - identify processes which contribute to improvements for sustainability best practice
- self-management skills to:
  - identify appropriate safety and environmental response equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to:
  - work with others and in a team by cooperating with team members
- technical skills to:
  - collect, organise and interpret technical information relating to recognising marine mechanical workplace situations that are potentially harmful to the environment
  - use and monitor spill kits, including kit reordering and disposal
- technology skills to:
  - use workplace environmental safety-related technology to assist with clean and safe work

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

practices

### Required knowledge

- aspects of environmental regulations and implications for work being undertaken in a marine workplace
- characteristics and potential environmental impact of products used in the repair, maintenance and installation of marine craft engines, components and electrical systems
- philosophy of prevention, reuse, reduce, recycle
- procedures for use of spill kit
- effects of pollution and methods to minimise it
- actions to be undertaken in case of significant environmental threat in a marine mechanical workplace
- monitoring and recording procedures for environmental damage and breaches of environmental regulations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- monitor and apply environmental regulations and sustainability best practice as they apply in an marine mechanical workplace
- identify materials used in an marine mechanical workplace and assess their potential environmental impact
- monitor and record environmental damage and breaches to environmental regulations.

#### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- access to environmental legislation, regulations and best practice models
- access to an marine workplace or simulated environment that accurately reflects marine workshop working conditions
- access to workplace documents and reference images
- access to personal protective and environmental protection equipment of the type intended to be used in response to an environmental incident or accident.

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Ethical environmental practice</i></b> may include:	<ul style="list-style-type: none"> <li>• compliance with legislative obligations</li> <li>• hazardous materials handling best practice applications</li> <li>• organisation insurance requirements</li> <li>• discretion, judgement and problem-solving skills in undertaking environmentally sound work practices</li> </ul>
<b><i>Documents and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• hazardous substances register</li> <li>• environmental legislation</li> <li>• health regulations</li> <li>• site environmental policy</li> <li>• workplace environmental procedures and safety instructions</li> <li>• dangerous goods code safe operating procedures</li> </ul>
<b><i>Hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• toxic fumes and substances</li> <li>• flammable materials and fire hazards</li> <li>• spillages</li> <li>• waste and debris especially on floors, ladders, trolleys</li> <li>• electricity and water</li> <li>• toxic substances</li> <li>• damaged packing material or containers</li> <li>• broken or damaged equipment</li> <li>• unsafe lifting practices</li> </ul>
<b><i>Safety equipment and other material</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective equipment (PPE) including: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• hearing protection</li> <li>• gloves</li> <li>• other suitable protective clothing</li> <li>• safety footwear</li> </ul> </li> <li>• spill kit</li> <li>• absorbent materials</li> <li>• drip and catchment trays</li> <li>• waste bags</li> <li>• waste segregation systems</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Contaminants*** may include:

- solid or liquid wastes
- oil, fuel and grease
- hydrocarbon based degreasing agents and solvents
- acids
- alkaline wastes
- paint, lacquer, varnish
- glues and adhesive compounds
- household chemicals and pesticides

***Sustainability best practice*** may include:

- recycling waste
- energy conservation practices
- natural resources (water, etc.) conservation practices
- reusing
- environmental (green) purchasing practices
- noise minimisation

## Unit Sector(s)

<b>Competency field</b>	Marine
<b>Unit sector</b>	Environment

## Custom Content Section

Not applicable.

## AURREA4004 Manage environmental compliance in a marine workplace

### Modification History

Release	Comment
Release 1	Replaces AURR471182A Plan and manage compliance with environmental regulations in the marine service and repair industry Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competency required to plan and implement an appropriate management system that ensures the protection of the environment in a marine repair and service business.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit is applicable to marine qualifications at both Certificate IV and V level.</p> <p>Competence may be demonstrated in workplaces involved in the repair and service of vessels.</p> <p>Work is carried out in accordance with legislative obligations, environmental legislation, Australian standards, health regulations, manual handling procedures and organisation insurance requirements.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills to improve environmental performance by reducing environmental risk and waste.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and manage compliance with of environment regulations	<p>1.1.Reasons for ethical environmental practice in a marine repair and/or service workshop are identified</p> <p>1.2.Environmental responsibilities of employers and staff in a marine repair and/or service workshop are identified</p> <p>1.3.Penalties for company and individual breaches of legislation are identified</p> <p>1.4.Waste products are minimised and facilities are provided for waste materials, including biological material (marine biota) to be stored for recycling or disposal</p> <p>1.5.Collection and recycling arrangements are sourced and implemented for liquids, sludge, solids and other waste</p> <p>1.6.Suppliers with minimal excess packaging on goods received are sourced. Packaging on goods received is sorted and disposed of appropriately</p> <p>1.7.Waste and energy conservation strategies are identified and implemented strategies are identified and implemented</p>
2. Manage potential hazards to stormwater systems, foreshores and marine environments to avoid contamination	<p>2.1.Systems are in place to ensure wastewater or contaminants do not enter stormwater systems, foreshores or marine environments</p> <p>2.2.All drains and flows are identified on a site map or directly indicating where they flow</p> <p>2.3.Appropriate trade waste permits are put in place</p> <p>2.4.Slipways and hardstand areas are fitted with a containment system that prevents wastewater from entering the stormwater systems, foreshores and the marine environment</p> <p>2.5.Undercover, bunded and/or graded areas are provided and used for surface cleaning and preparation and the storage of all parts and components containing environmentally hazardous material</p> <p>2.6.Clearly identifiable storage or recycling containers are provided for all liquid wastes</p> <p>2.7.Oil separator and pits are cleaned and maintained as per manufacturer and/or component supplier/component supplier specifications</p> <p>2.8.An appropriate system is sourced and implemented</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>for the disposal of bilge water</p> <p>2.9. Spill kit is provided and used as needed by staff trained in its use to prevent the contamination of stormwater systems, foreshores and marine environments</p> <p>2.10. Workplace is kept clean to prevent unintentional pollution of stormwater systems, foreshores and marine environment</p>
3. Manage potential hazards to air quality to avoid contamination	<p>3.1. Activities generating fine particles in particular anti-foulant or other deleterious material removal are identified, minimised and contained</p> <p>3.2. A slipway, hardstand or approved method/area is provided for abrasive sanding activities</p> <p>3.3. An undercover and well ventilated area is provided for Fibre glassing</p> <p>3.4. Identify whether an approved spray booth is necessary for surface coating operations and if so ensure that it is properly maintained</p> <p>3.5. A well ventilated room is provided for paint preparation</p> <p>3.6. A well ventilated area is provided for any welding activities</p> <p>3.7. Hazards of gases and fumes are identified, minimised and contained</p> <p>3.8. Clean-up of guns and general tools and equipment is conducted in an environmentally safe manner</p>
4. Minimisation of noise hazards is planned and managed	<p>4.1. Noise generating activities are minimised and carried out within approved operating hours</p> <p>4.2. Fixed machinery has silencers fitted or is contained within a noise minimisation structure</p>
5. Management systems	<p>5.1. An environmental policy and contingency plan suitable to the needs of the business is developed and implemented</p> <p>5.2. Waste to landfill is calculated and possible savings through reuse and recycling are calculated</p> <p>5.3. Payback period on environmental equipment is calculated</p> <p>5.4. Manage staff adherence to environmental responsibilities</p> <p>5.5. Environmental records are accurately and legibly maintained and stored securely in a form accessible</p>

ELEMENT	PERFORMANCE CRITERIA
	for reporting procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to environmental procedures from legislation, regulations, policies, guidelines, standards and workplace best practices in a marine repair and service business
- communicate ideas and information to enable all work undertaken is in accordance with environmental best practice
- seek support from stakeholders for implementing suitable innovation and continuous improvement
- plan and organise activities, including the preparation of equipment and materials, recycling and waste management system and the selection of appropriate worksite to avoid any environmental contamination, backtracking, workflow interruptions or wastage
- promote work with others and in a team by recognising dependencies and using cooperative approaches to minimise wastage, optimise workflow and productivity
- use planning, checking and inspection techniques to avoid environmental contamination and wastage
- use mathematical ideas and techniques to correctly complete measurements and estimate material requirements required for the work and calculate wastage rates of various methods
- use the workplace technology related to environmental protection and recycling equipment

#### Required knowledge

Required knowledge includes:

- aspects of environmental legislation and its relationship with workplace health and safety (WHS), financial and risk management
- requirements for trade waste permits
- spill clean-up procedures
- characteristics and potential environmental impact of products used in the repair and service of vessels

**REQUIRED SKILLS AND KNOWLEDGE**

- philosophy of sustainability through prevent, reduce, reuse and recycle
- procedures for rectifying machinery faults and material defects
- action to be undertaken in case of significant environmental threat in the workplace
- reporting procedures for significant environmental damage occurring in the workplace
- awareness of the environmental effects of tributyltin, arsenic, mercury, copper, lead, hydrocarbons, oil/oily water and DDT on marine environments
- cleaner production and eco-efficient strategies to avoid the production of waste

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Plan and manage safe handling requirements for equipment, products and materials, including use of personal protective equipment.
- Plan and manage environmental protection procedures in the business.
- Identify materials used in the repair and service process and assess and manage their environmental impact.
- Effective recycling processes are in place.
- Plan and manage work instructions, operating procedures and inspection processes are followed to:
  - minimise the risk of injury to self and others
  - maintain a clean workplace
  - prevent damage and wastage of goods, equipment and products
  - dispose of waste in accordance with legislative requirements and best practice
  - maintain required production output and product quality.
- Report significant environmental damage or spills.
- Plan and manage operator maintenance on tools and equipment to ensure environmental efficiency.
- Plan and manage operator maintenance on spray booth and spray equipment is conducted where applicable, to ensure environmental efficiency.
- Manage effective planning and teamwork related to environmental best practice.
- Develop/implement or audit an existing business environmental policy which covers at a minimum:
  - waste, recycling, hazards to stormwater, air quality, noise, energy minimisation and costs.
- Modify activities to cater for variations in workplace context and the environment.

##### Context of, and specific resources for assessment

- Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>Access to a marine repair and service workshop with access to marine or components requiring repair, maintenance, testing or installing of components and/or systems, parts washers, recycling bins, bunded/graded wash bays, oil water separator liquid, sludge and solid wastes.</li> <li>Resources may include, pressure washing and facilities for the use of recycled water.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</li> <li>Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.</li> <li>Assessment of this competency is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include, certification of compliance of the final outcome/product or authorisation for use by a component authority.</li> <li>Assessment must confirm the inference that competency is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>RANGE STATEMENT</b>	
<b>Marine repair and service workshop</b>	<p>Marine repair and service workshop includes:</p> <ul style="list-style-type: none"> <li>marine workshop undertaking the repair or service of marine and marine components</li> </ul>
<b>Work requirements</b>	<p>Work involves the planning and management of normal activities of a marine repair and service workshop, including:</p> <ul style="list-style-type: none"> <li>the installation, removal, repair, testing and replacement of marine craft engines and associated components</li> <li>the installation, removal, repair, testing and replacement of marine electrical systems and components</li> <li>welding, soldering and thermal cutting of marine components</li> <li>water testing</li> <li>cleaning and washing of external and internal surfaces, including glass and wet areas</li> <li>the removal and preparation of vessel surfaces and components for painting with anti-foulant based products</li> </ul>
<b>WHS</b>	<p>WHS requirements include:</p> <ul style="list-style-type: none"> <li>safety management systems, hazardous substances and dangerous goods code and safe operating procedures</li> </ul>
<b>Tools and equipment</b>	<p>Tools and equipment are to include:</p> <ul style="list-style-type: none"> <li>spill kits, recycling bins and drums, parts washers, bunded/graded wash bays, air extraction equipment, slipways or hardstand areas with pollution control measures and diversion valves, an oil water separator, a containment area for hazardous substances and a wastewater management system</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>material data safety sheets (MSDS), manufacturer and/or component supplier/component specifications, environmental records and costings of equipment</li> <li>staff environmental induction material</li> </ul>

RANGE STATEMENT	
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
<b>Information and procedures</b>	Information and procedures may include: <ul style="list-style-type: none"><li>• environmental legislation, regulations and advice</li><li>• workplace procedures relating to the use of tools and equipment</li><li>• work instructions and procedures</li><li>• site environmental policy</li><li>• workplace procedures relating to reporting and communication</li><li>• manufacturer and/or component supplier/component supplier specifications and operational procedures</li><li>• local council and waterways regulations</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Environment
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## AURRGA3001 Launch and recover a vessel using a trailer

### Modification History

Release	Comment
Release 1	Replaces AURR346336A Launch and recover a vessel using a trailer  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to use a trailer to launch and recover a motor driven vessel in an estuary or seaway.</p> <p>It requires the ability to operate equipment to launch and recover a vessel and the ability to understand safety and pre-launch requirements.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions (e.g. boat licence requirements for each state and territory). Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to marine mechanics who undertake the launching and recovering of a vessel in an estuary or seaway using a trailer so as to water test the vessel to confirm that repairs have been successfully undertaken.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for vessel launch	1.1. Read and interpret job requirements and specifications 1.2. Locate workplace health and safety (WHS) requirements, including personal protection needs 1.3. Collect tools and equipment and check for their safe and effective operation 1.4. Outline procedures to minimise task time 1.5. Check weather, tidal and launch site for safe launching conditions
2. Conduct pre-launch safety inspection	2.1. Audit vessel safety equipment 2.2. Inspect systems and components for seaworthiness and conformity to manufacturer and component supplier specifications and regulations to ensure vessel safety 2.3. Check vessel for safety using testing equipment, as appropriate 2.4. Repair systems and components that fail the safety inspection in accordance with manufacturer and component supplier specifications and site procedures
3. Launch vessel	3.1. Manoeuvre appropriate vehicle to position trailer in suitable depth of water on launch way 3.2. Secure trailer as required by state and territory regulations 3.3. Operate tilting and winch mechanisms and remove safety chain and winch strap from vessel 3.4. Tether vessel to trailer using suitable rope and knots 3.5. Move vessel from launch way to a safe area in the water 3.6. Park vehicle and trailer in suitable area
4. Recover vessel	4.1. Manoeuvre vehicle to position trailer in suitable depth of water on launch way 4.2. Remove detachable trailer fixtures and fit trailer retrieval guide poles 4.3. Manoeuvre vessel into recovery area and align with trailer guides and rollers 4.4. Tether vessel to trailer using suitable rope and knots 4.5. Operate tilting and winch mechanisms and attach safety chain and winch strap to vessel

ELEMENT	PERFORMANCE CRITERIA
	<p>4.6. Secure vessel and trailer safely</p> <p>4.7. Recover vessel according to WHS and environmental legislation, manufacturer specifications, industry regulations, and enterprise policies and procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use a trailer winch and tilt mechanism, launch and recover a vessel, and use safety inspection tools and computerised equipment
- communication skills to the level required to communicate effectively regarding work requirements, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to read and understand vessel specifications and operation
- literacy skills to the level required to locate and understand information related to work orders and WHS and organisational policies and procedures related to launching and recovering a vessel using a trailer
- numeracy skills to the level required to read weather charts and to complete tests and measurements to determine vessel seaworthiness
- problem-solving skills to the level required to identify technical and procedural problems related to launching and recovering a vessel using a trailer
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity
- planning skills to the level required to use pre-checking and seaworthiness inspection techniques to anticipate problems and avoid wastage of time and material

#### Required knowledge

Required knowledge includes:

- tare weight, gross vehicle mass and aggregate trailer mass regulations related to trailer weights on single, dual and tri axle trailers
- inspection requirements and standards for safety equipment, hull and fittings
- daily maintenance requirements for vessels
- manufacturer and/or component supplier specifications, including workshop manuals
- water depth required for vessel flotation
- pre-launch inspection procedures
- equipment requirements and standards
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to marine launch site and trailer winch and tilt mechanisms
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to marine operations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparation for launch in a systematic manner
- inspect a vessel for safe operation in an estuary or seaway
- follow legislative, state and territory regulations and organisational requirements
- launch a range of vessels using a trailer
- recover a range of vessels vessel using a trailer.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate vessels
  - trailer
  - equipment and tools appropriate to checking, launching and recovering vessel
  - technical specifications.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of

**EVIDENCE GUIDE**

	<p>workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Inspecting seaworthiness of vessel**

Inspecting seaworthiness of vessel may include:

- checking safety equipment and fitment
- checking currency and accessibility of vessel safety equipment
- checking vessel hull and fittings for safety and journey suitability
- checking fuel and battery
- ensuring fresh water is onboard
- checking other resources
- inspecting hull for secured watertight mechanisms (e.g. seacocks, drain plugs and

<b>RANGE STATEMENT</b>	
	watertight flotation chambers)
<b>Conditions</b>	<p>Conditions may include:</p> <ul style="list-style-type: none"> <li>• coastal</li> <li>• estuary</li> <li>• day and night</li> <li>• salt and fresh water</li> <li>• tides and currents</li> <li>• varying water depths</li> <li>• climatic conditions</li> <li>• launch site (e.g. beach launch and boat ramp surfaces)</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• vessels up to 10 metres in length with a maximum beam of 2.5 metres</li> <li>• single or multi-hulled</li> <li>• flat bottomed</li> <li>• planing and displacement hulls</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include operational risk assessments associated with marine licence requirements and the International Regulations for Preventing Collisions at Sea 1972 (COLREGS), and include:</p> <ul style="list-style-type: none"> <li>• rope, chain and steel cable dangers</li> <li>• vessel and dockside flammable materials</li> <li>• fire prevention</li> <li>• rope, chain and steel cable dangers</li> <li>• vessel and dockside flammable materials</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• communication equipment (e.g. Emergency Position Indicating Radio Beacon (EPIRB))</li> <li>• suitable ropes, chains, shackles and tie-downs</li> <li>• general hand tools and lubricants</li> <li>• specialist hand tools (e.g. electric winch harness and remote, winch handles and</li> </ul>

<b>RANGE STATEMENT</b>	
	leather gloves) • tow vehicle suitable for the task
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• vessel manufacturer and/or component supplier specifications (operational), seaworthiness vessel and equipment checklist and vessel operational checklist</li> <li>• safe work procedures related to the driving and manoeuvring of motorised vessel</li> <li>• regulatory/legislative requirements pertaining to marine craft</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external personnel</li> <li>• Australian standards</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> </ul>
<b>Legislative requirements</b>	Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include: <ul style="list-style-type: none"> <li>• International Regulations for Preventing Collisions at Sea 1972 (COLREGS)</li> <li>• award and enterprise agreements</li> <li>• tare weight, gross vehicle mass and aggregate trailer mass (ATM) regulations</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>

**RANGE STATEMENT****WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures

**Environmental requirements**

Environmental requirements may include:

- waste management
- noise
- dust
- clean-up management

**Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

## Competency field

Competency field	
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## AURRGA3002 Launch and recover a vessel from crane, gantry and forklift

### Modification History

Release	Comment
Release 1	<p>Replaces AURR346435B Launch and recover vessel from crane, gantry and forklift</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to launch and recover a vessel from a crane, gantry or forklift.</p> <p>It requires the ability to identify and confirm work requirements, launch and recover the vessel and complete work finalisation processes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions (e.g. forklift licence and vessel operation licence). Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the launching and recovery of a vessel from a crane, gantry or forklift in a marine environment.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area 1.6. Carry out pre-launch check 1.7. Carry out pre-launch vessel check
2. Launch vessel	2.1. Attach and position slings and lifting equipment to hull 2.2. Manoeuvre and operate crane, gantry or forklift to place vessel in suitable depth of water at launch site avoiding damage to vessel and the environment 2.3. Remove slings and lifting equipment 2.4. Move vessel from launch site to safe area 2.5. Move crane, gantry or forklift from launch site 2.6. Carry out all activities according to industry regulations and guidelines, WHS and environmental legislation, and enterprise policies and procedures
3. Recover vessel	3.1. Position crane, gantry or forklift to lift point ensuring suitable depth of water is present 3.2. Manoeuvre vessel into recovery area and align with lifting equipment 3.3. Attach and position slings and lifting equipment to hull to prevent hull damage 3.4. Operate lifting equipment avoiding damage to vessel and environment 3.5. Secure vessel 3.6. Carry out all activities according to industry regulations and guidelines, WHS and environmental legislation, and enterprise policies and procedures
4. Clean up work area and finalise work	4.1. Clean and inspect equipment and tooling according to workplace requirements 4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 4.3. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with

ELEMENT	PERFORMANCE CRITERIA
	workplace procedures 4.4.Finalise and process work completion documentation and give to appropriate persons, as required

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to vessel launching and recovery, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes

- water depth requirements for vessel flotation
- pre-launch inspection procedures, equipment requirements and standards
- lifting sling equipment and vessel attachment points
- techniques for manoeuvring a crane, gantry, forklift and attached vessel
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the vessel launching and recovery from a crane, gantry and forklift, including safe lifting requirements and launch site licensing requirements
- organisational policies and procedures, including quality, reporting and recording procedures, related to vessel launching and recovery from a crane, gantry and forklift



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- launch and recover a vessel using a crane, gantry and forklift
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location
  - vessel and a crane, gantry and forklift
  - materials relevant to the launching and recovery of vehicles using crane, gantry or forklift
  - equipment, hand and power tools appropriate to the launching and recovery of vessel using crane, gantry forklift
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Vessels**

Vessels may include:

- vessels up to 10 metres in length with a maximum beam of 2.5 metres
- single or multi-hulled
- flat bottomed
- planing and displacement hulls

**Conditions**

Conditions may include:

- coastal

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• estuary</li> <li>• day and night</li> <li>• salt and/or freshwater</li> <li>• varying water depth</li> <li>• climatic conditions</li> </ul>
<b>Lifting equipment</b>	<p>Lifting equipment may include:</p> <ul style="list-style-type: none"> <li>• crane</li> <li>• gantry</li> <li>• forklift</li> <li>• slings</li> <li>• specialised lift equipment</li> </ul>
<b>Launch site surface</b>	<p>Launch site surface may include:</p> <ul style="list-style-type: none"> <li>• sand</li> <li>• gravel</li> <li>• bitumen</li> <li>• concrete</li> </ul>
<b>Launch site location</b>	<p>Launch site location may include:</p> <ul style="list-style-type: none"> <li>• ramp</li> <li>• slipway</li> <li>• marina</li> <li>• harbour in saltwater or freshwater</li> </ul>
<b>Pre-launch check</b>	<p>Pre-launch check may include:</p> <ul style="list-style-type: none"> <li>• obtaining climate information and tidal conditions</li> <li>• checking launch site</li> <li>• site inspection</li> </ul>
<b>Pre-launch vessel check</b>	<p>Pre-launch vessel check may include:</p> <ul style="list-style-type: none"> <li>• checking safety equipment</li> <li>• checking hull condition</li> <li>• checking propulsion unit</li> <li>• checking fuel status</li> <li>• checking equipment is secured</li> </ul>
<b>Securing vessel</b>	<p>Securing vessel may include:</p> <ul style="list-style-type: none"> <li>• transporting vessel from the recovery area to a safe position (storage or trailer)</li> <li>• lowering vessel onto storage location or trailer</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>removing slings and lifting equipment after vessel is moved from launch site to safe area</li> <li>moving vessel to storage rack (or trailer)</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>hand tools</li> <li>testing equipment, including multimeters</li> <li>power tools</li> <li>air tools</li> <li>specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include operational risk assessments associated with marine licence requirements and the International Regulations for Preventing Collisions at Sea 1972 (COLREGS), and include:</p> <ul style="list-style-type: none"> <li>rope, chain and steel cable dangers</li> <li>vessel and dockside flammable materials</li> <li>fire prevention</li> <li>rope, chain and steel cable dangers</li> <li>vessel and dockside flammable materials</li> <li>toxic substances</li> <li>electrical safety</li> <li>machinery movement and operation</li> <li>manual and mechanical lifting and shifting</li> <li>working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>parts listing prices and catalogues</li> <li>inventory systems</li> <li>material safety data sheets (MSDS)</li> <li>diagrams or sketches</li> <li>engineer's design specifications and instructions</li> <li>manufacturer specifications</li> <li>industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>Australian standards</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• workplace specifications and requirements</li> <li>• current boating licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including</li> </ul>

**RANGE STATEMENT**

	<p>Australian standards</p> <ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	
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## AURRGA3003 Moor a motor-driven vessel

### Modification History

Release	Comment
Release 1	Replaces AURR346543A Moor a motor driven vessel Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to moor and dock a motor driven vessel to or from a dockside or swing mooring.</p> <p>It requires the ability to operate equipment to moor and dock a vessel and the ability to understand the safety requirements.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions (e.g. boat licence requirements for each state and territory). Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	This unit applies to marine mechanics who undertake the launching and mooring of a vessel for water testing so as to confirm vessel repairs have been successfully undertaken. This would occur at a fixed dock or a swing mooring in a marine environment.
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## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare vessel	1.1.Read and interpret job requirements and specifications 1.2.Locate workplace health and safety (WHS) requirements, including personal protection needs 1.3.Collect appropriate tools and equipment and check for their safe and effective operation 1.4.Outline procedures to minimise task time 1.5.Check weather, tidal conditions and launch site for safe launching conditions
2. Conduct safety inspection prior to moving off	2.1.Audit vessel safety equipment 2.2.Inspect hull and vessel systems and components for seaworthiness and conformity to manufacturer and component supplier specification and regulations to ensure vessel safety 2.3.Check vessel for safety using testing equipment, as appropriate 2.4.Start and check engines, controls, autopilot and failsafe systems 2.5.Repair systems and components that fail the safety inspection in accordance with manufacturer, industry and component supplier specifications, and site procedures
3. Move off mooring	3.1.Remove and attach appropriate lines using suitable knots, taking into account weather conditions, currents, tides, tidal flows and safety 3.2.Manoeuvre vehicle avoiding damage to vessel and environment 3.3.Move vessel off dockside
4. Dock and moor vessel	4.1.Select mooring site and attachment equipment as appropriate for vessel and mooring site 4.2.Locate suitable attachment points on the mooring dock and vessel 4.3.Manoeuvre vessel avoiding damage to vessel and environment 4.4.Link vessel to the mooring and secure attachment equipment in accordance with Maritime Regulations 4.5.Secure vessel alongside using appropriate docklines and knots and in accordance with regulatory requirements

ELEMENT	PERFORMANCE CRITERIA
	4.6. Use buffering equipment, as required 4.7. Moor vessel according to WHS and environmental legislation, manufacturer specifications, industry regulations and enterprise policies and procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to launch and recover a vessel from a dockside, use safety inspection tools and computerised equipment and tie appropriate knots
- communication skills to the level required to communicate effectively regarding work requirements, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to read and understand vessel specifications and operation
- literacy skills to the level required to locate and understand information related to work orders and WHS and organisational policies and procedures related to launching and recovering a vessel from a dockside
- numeracy skills to the level required to read weather charts and to complete tests and measurements to determine vessel seaworthiness
- problem-solving skills to the level required to identify technical and procedural problems related to launching and recovering a vessel from a dockside
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity
- planning skills to the level required to use pre-checking and seaworthiness inspection techniques to anticipate problems, and avoid wastage of time and materials

#### Required knowledge

Required knowledge includes:

- knot types for a variety of situations including dock, fixed pier, jetty, public or private wharf, concrete pontoon and plastic pontoon
- swing mooring types and construction methods as required by regulating authority and vessel size
- inspection requirements and standards for safety equipment, hull and fittings
- daily maintenance requirements for vessels and mooring docklines
- manufacturer and component supplier specifications, including workshop manuals
- inspection procedures related to moving away or off a swing mooring or dockside
- equipment requirements and standards
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to marine dockside launching and mooring
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to marine operations



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparation of launch in a systematic manner
- inspect a vessel for seaworthiness
- follow legislative, state and territory regulations and organisational requirements
- safely and responsibly move a vessel to a position alongside a dockside
- safely and responsibly move a vessel off/away from a dockside
- safely and responsibly move a vessel toward a swing mooring, retrieving and securing the mooring buoy and securely attaching the mooring chain in accordance with Maritime Regulations
- safely and responsibly move a vessel away from a swing mooring and inspect and release the mooring buoy and chain in accordance with Maritime Regulations
- safely moor a vessel to a dock.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• appropriate workplace (i.e. dockside)</li> <li>• appropriate vessel</li> <li>• equipment and tools appropriate to launching and mooring a motorised vessel</li> <li>• organisational procedures, including WHS requirements.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Check safety equipment</b>	<p>Check safety equipment may include:</p> <ul style="list-style-type: none"> <li>• checking navigation lights</li> <li>• checking bilge pump capacity</li> <li>• checking rope and cable size and length</li> </ul>
<b>Manoeuvre and secure vessel</b>	<p>Manoeuvre and secure a vessel may include manoeuvring and securing:</p> <ul style="list-style-type: none"> <li>• to a dock</li> <li>• to a swing mooring</li> <li>• off a dock</li> <li>• off and away from a swing mooring</li> </ul>
<b>Inspecting seaworthiness of vessel</b>	<p>Inspecting seaworthiness of vessel may include:</p> <ul style="list-style-type: none"> <li>• checking safety equipment for fitment</li> <li>• checking currency and accessibility of vessel</li> <li>• checking vessel hull and fittings for safety and journey suitability</li> <li>• checking fuel</li> <li>• checking other resources</li> </ul>
<b>Conditions</b>	<p>Conditions may include:</p> <ul style="list-style-type: none"> <li>• coastal</li> <li>• estuary</li> <li>• day and night</li> <li>• salt and/or fresh water</li> <li>• varying water depth</li> <li>• climatic conditions</li> </ul>
<b>Vessel</b>	<p>Vessel may include:</p> <ul style="list-style-type: none"> <li>• vessels up to 90 metres</li> <li>• single or multi-hull</li> <li>• powered or non-powered propulsion system</li> <li>• open, half or full cabin</li> <li>• wood, aluminium or composite material construction</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include operational risk assessments associated with marine licence requirements and the International Regulations for Preventing Collisions at Sea 1972 (COLREGS), and includes:</p> <ul style="list-style-type: none"> <li>• rope, chain and steel cable dangers</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• vessel and dockside flammable materials</li> <li>• fire prevention</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• communication equipment (e.g. emergency position indicating radio beacon (EPIRB))</li> <li>• suitable ropes, chains and tie-downs</li> <li>• general hand tools and lubricants</li> <li>• specialist tools (e.g. electric winch harness and remote, winch handles and leather gloves)</li> <li>• tow vehicle suitable for the task</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• vessel manufacturer and/or component supplier specifications (operational), seaworthiness vessel and equipment checklist and vessel operational checklist</li> <li>• safe work procedures related to the driving and manoeuvring of motorised vessel</li> <li>• regulatory/legislative requirements pertaining to marine craft</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external personnel</li> <li>• Australian standards</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• International Regulations for Preventing Collisions at Sea 1972 (COLREGS) award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> <li>• current boating licence</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> </ul>

**RANGE STATEMENT**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• reporting and recording procedures</li></ul> |
|--|--|

**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	
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## AURRTA2001 Service deck, hull and cabin equipment

### Modification History

Release	Comment
Release 1	Replaces AURR246870B Service deck, hull and cabin equipment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform servicing procedures to the vessel deck, hull and cabin equipment.</p> <p>It requires the ability to identify and confirm work requirements, prepare for and service deck, hull and cabin equipment and fittings and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the return to serviceable condition of deck, hull and cabin equipment and fittings on vessels of varying types and sizes in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source service procedures and relevant workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Determine service method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.6. Set up work area
2. Service deck, hull and cabin equipment and fittings	2.1. Carry out service and adjustments to deck and hull in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Carry out service and adjustments to cabin equipment and fittings in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.3. Test systems for correct operation, make required adjustments and re-test
3. Clean up work area and maintain equipment	3.1. Clean and inspect equipment and tooling according to workplace requirements 3.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as required 3.4. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing procedures of marine deck, hull and cabin equipment and fittings and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customer, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications, and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- vessel classifications and component types
- operating principles and construction of marine deck, hull and cabin equipment
- mechanical, hydraulic, electrical and electronic principles and procedures applicable to service procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to servicing procedures of marine deck, hull and cabin equipment and fittings, including power lifting equipment
- organisational policies and procedures, including quality, reporting and recording procedures, related to servicing procedures of marine deck, hull and cabin equipment and fittings



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service the deck, hull and cabin equipment and fittings of a range of vessels to workplace and manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - deck, hull and cabin equipment and fittings requiring repair
  - equipment, hand and power tools appropriate to the servicing of deck, hull and cabin equipment and related equipment and fittings
  - activities covering the mandatory task requirements

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Fittings</b>	<p>Fittings may include:</p> <ul style="list-style-type: none"> <li>• bollards, ferrules, runners, clamps, cleats, turnbuckles and press studs</li> <li>• winches and capstans</li> <li>• bow and stern rails, rudder and steering</li> </ul>

<b>RANGE STATEMENT</b>	
	bushes and bearings <ul style="list-style-type: none"> <li>• fishing rods, bait boxes and cabin fixtures</li> </ul>
<b>Servicing methods</b>	Servicing methods may include: <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• minor adjustments and operational testing</li> <li>• replacement of fluids and filters</li> </ul>
<b>Marine engines</b>	Marine engines may include: <ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	Vessels may include: <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>

RANGE STATEMENT	
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURRTA3002 Carry out hull repairs

### Modification History

Release	Comment
Release 1	Replaces AURR346108B Carry out hull repairs Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to inspect the hull of a vessel for deterioration and damage and complete repairs using approved methods, materials and equipment.</p> <p>It requires the ability to identify and confirm work requirements, inspect and repair the hull of a vessel and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake an inspection of the hull of a vessel for deterioration and damage and complete repairs in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Confirm nature and scope of work to be carried out</li><li>1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices, applicable to the work</li><li>1.3. Access and interpret repair method, workshop manuals and manufacturer information</li><li>1.4. Check and prepare tools, equipment and materials</li><li>1.5. Set up work area</li></ul>
2. Inspect hull deterioration and damage and complete repairs	<ul style="list-style-type: none"><li>2.1. Inspect hull and identify deterioration and damage</li><li>2.2. Carry out repairs in accordance with vessel manufacturer and component specifications, and WHS and workplace environmental and sustainable procedures and practices</li><li>2.3. Test repairs, make required adjustments and re-test</li><li>2.4. Determine the need for water testing</li></ul>
3. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>3.1. Clean and inspect equipment and tooling according to workplace requirements</li><li>3.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements</li><li>3.3. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</li><li>3.4. Finalise and process work completion documentation and give to appropriate persons, as required</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the diagnosis and repair of marine hulls, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- vessel classification, component types and identification
- repair requirements and standards as specified by the manufacturer and component supplier
- types of materials used in vessel hulls
- repair methods related to vessel hulls
- use and application of testing, measuring and specialised servicing equipment
- inspection techniques
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the diagnosis and repair of vessel hulls, including safety precautions, properties and use of repair materials and products used in repair procedures
- organisational policies and procedures, including quality, reporting and recording

**REQUIRED SKILLS AND KNOWLEDGE**

procedures, related to the repair of vessel hulls

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- carry out repairs to a range of faults in vessel hulls and using a variety of materials, including aluminium, wood and composite materials within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials to the repair of marine hulls
  - equipment, hand and power tools appropriate to the repair of marine hulls
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Repairs**

Repairs may include:

- wood repairs
- plastic repairs
- composite material repairs
- aluminium repairs
- steel repairs
- fibreglass repairs

**Tooling and equipment**

Tooling and equipment may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURRTA3003 Winterise vessel and engine systems

### Modification History

Release	Comment
Release 1	Replaces AURR346650A Winterise vessel and engine systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to winterise or prepare a vessel and its engine systems for seasonal shutdown and storage.</p> <p>It requires the ability to identify and confirm work requirements, winterise the vessel and engine systems and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the preparation and winterisation of vessels and their engine systems in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Use work instructions to determine the job requirements and specifications, including method, process and equipment 1.2. Locate workplace health and safety (WHS) requirements, including personal protection needs 1.3. Check equipment and tools for safe and effective operation 1.4. Determine procedures to minimise task time
2. Winterise vessel systems	2.1. Test vessel systems and compare to system specifications prior to winterising 2.2. Report vessel systems that fail testing and gain rectification approval from customer 2.3. Carry out winterising procedures in accordance with vessel manufacturer and component specifications and guidelines, WHS and environmental legislation, and enterprise policies and procedures 2.4. Prepare report for the customer detailing work undertaken and technical and/or regulatory requirements
3. Winterise engine systems	3.1. Test engine systems and compare to system specifications prior to winterising 3.2. Report engine systems which fail testing to the customer and obtain rectification approval 3.3. Carry out winterising procedures in accordance with manufacturer and component specifications and guidelines, WHS and environmental legislation, and enterprise policies and procedures 3.4. Seal engine openings against ingress of foreign matter 3.5. Prepare report for the customer detailing work undertaken and technical and/or regulatory requirements
4. Clean up work area and finalise work	4.1. Clean and inspect equipment and tooling according to workplace requirements 4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 4.3. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures 4.4. Finalise and process work completion

ELEMENT	PERFORMANCE CRITERIA
	<p>documentation and give to appropriate persons, as required</p> <p>4.5.Prepare report for the customer detailing work undertaken and technical or regulatory requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the preparation and winterisation of a vessel and its engine systems for seasonal shutdown and storage, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and to identify diagnose and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- vessel classification, system type and component identification
- engine classification, system types and component identification
- engine system requirements and their relationship to vessel systems and associated components
- propulsion system requirements and their relationship to vessel systems and associated components
- mechanical, hydraulic, electrical and electronic principles and application
- properties and use of servicing fluids, and lubricants and anti-corrosion products used in winterising procedures
- servicing requirements as specified by manufacturer's and component suppliers
- use and application of testing, measuring and specialised servicing equipment
- manufacturer and component supplier specifications, including workshop manuals

**REQUIRED SKILLS AND KNOWLEDGE**

and repair guides

- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the preparation and winterisation of a vessel and its engine systems
- organisational policies and procedures, including quality, reporting and recording procedures, related to the preparation and winterisation of a vessel and its engine systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- test, winterise and store a range of vessels
- test, winterise and store a range of marine engine systems
- complete clean-up activity in a systematic manner
- safely operate power lifting equipment
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - appropriate vessels and engine systems
  - materials relevant to the preparation and winterising of vessels and engine systems
  - equipment, hand and power tools appropriate to the winterising of vessel and engine systems
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment

**EVIDENCE GUIDE**

	<p>Guidelines of this Training Package.</p> <ul style="list-style-type: none"> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Preparing to winterise**

Preparing to winterise may include:

- inspecting engine
- reading service data
- compiling report
- testing, inspecting, adjusting, cleaning, and weatherproofing components and systems

**Vessels**

Vessels may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> <li>• powered or non-powered propulsion system</li> <li>• open, half or full cabin</li> <li>• wood, aluminium or composite material construction</li> </ul>
<b>Engine systems</b>	<p>Engine systems may include:</p> <ul style="list-style-type: none"> <li>• inboard or outboard</li> <li>• 2- or 4-stroke</li> <li>• single or multi-cylinder</li> <li>• water or air cooled</li> <li>• electrical or electronic</li> <li>• remote or local controlled</li> </ul>
<b>Fuel systems</b>	<p>Fuel systems may include</p> <ul style="list-style-type: none"> <li>• petrol</li> <li>• diesel</li> <li>• gas</li> <li>• carburetion or fuel injection</li> <li>• manual or electric start</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• testing equipment, including multimeters</li> <li>• power tooling</li> <li>• air tooling</li> <li>• specialist tooling and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current boating licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• road rules</li><li>• safe driving policy</li></ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURRTA3004 Recommission vessel systems

### Modification History

Release	Comment
Release 1	Replaces AURR346660B Recommission vessel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to prepare a vessel system for use after seasonal shutdown and storage.</p> <p>It requires the ability to identify and confirm work requirements, test and recommission vessel systems and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the recommissioning of a vessel system for use after seasonal shutdown and storage in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Recommission vessel systems	2.1. Carry out recommissioning procedures in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Test vessel systems and compare to manufacturer and component specifications 2.3. Determine and report vessel systems which fail testing and gain rectification approval from customer 2.4. Repair and test failed systems 2.5. Commission vessel system 2.6. Determine the need for water testing
3. Clean up work area and finalise work	3.1. Clean and inspect equipment and tooling according to workplace requirements 3.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.3. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures 3.4. Finalise and process work completion documentation and give to appropriate persons, as required 3.5. Prepare report for the customer detailing work undertaken and technical or regulatory requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the recommissioning of vessel systems, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- vessel classification, system type and component identification
- principles and application of mechanical, hydraulic, electrical and electronic principles
- propulsion system requirements and relationship to vessel systems and associated components
- properties and use of servicing fluids and lubricants products used in recommissioning procedures
- recommissioning requirements and specifications as specified by the manufacturer and component supplier, including workshop manuals and repair guides
- use and application of testing, measuring and specialised servicing equipment
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the recommissioning of vessel systems, including power lifting requirements and licensing

**REQUIRED SKILLS AND KNOWLEDGE**

- organisational policies and procedures, including quality, reporting and recording procedures, related to the recommissioning of vessel systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- recommission and test a range of vessel systems to manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - vessel systems requiring recommissioning
  - equipment, hand and power tools appropriate to the recommissioning of vessel systems
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Vessels**

Vessels may include:

- single or multi-hull
- inboard or outboard drive
- powered or non-powered propulsion system
- open, half or full cabin
- wood, aluminium or composite material construction

**Marine engines**

Marine engines may include:

- 2-stroke petrol

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Recommissioning</b>	<p>Recommissioning may include:</p> <ul style="list-style-type: none"> <li>• engine system inspection</li> <li>• reading service data</li> <li>• compiling reports</li> <li>• testing, inspecting, adjusting, cleaning, and repairing components and systems</li> </ul>
<b>Systems</b>	<p>Systems may include:</p> <ul style="list-style-type: none"> <li>• propeller or jet drive propulsion systems with tilt, trim and manual adjustment</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including</li> </ul>

**RANGE STATEMENT**

	<p>Australian standards</p> <ul style="list-style-type: none"><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURRTA3005 Repair deck, hull and cabin equipment

### Modification History

Release	Comment
Release 1	Replaces AURR346866B Repair deck, hull and cabin equipment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to repair vessel deck, hull and cabin equipment and fittings using approved methods, materials and equipment.</p> <p>It requires the ability to identify and confirm work requirements, repair deck, hull and cabin equipment and fittings, test and recommission vessel and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the repairing of vessel deck, hull and cabin equipment and fittings using approved methods, materials and equipment in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices, applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Repair deck and hull	2.1. Inspect deck and hull and identify deterioration and damage 2.2. Perform repairs and adjustment operations in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.3. Test repairs, make required adjustments and re-test 2.4. Determine the need for water testing
3. Repair cabin equipment and fittings	3.1. Inspect cabin equipment and fittings and identify deterioration and damage 3.2. Perform repairs and adjustment operations in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices
4. Test and recommission vessel	4.1. Test deck, hull and cabin equipment and fittings for correct operation in accordance with manufacturer and component supplier specifications 4.2. Repair and test failed systems 4.3. Determine and report vessel deck, hull and cabin equipment and fittings which fail testing and gain rectification approval from customer 4.4. Determine the need for water testing 4.5. Carry out recommissioning procedures in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices
5. Clean up work area and finalise work	5.1. Clean and inspect equipment and tooling according to workplace requirements 5.2. Tag unserviceable equipment and faults identified in

ELEMENT	PERFORMANCE CRITERIA
	<p>accordance with workplace requirements</p> <p>5.3.Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</p> <p>5.4.Finalise and process work completion documentation and give to appropriate persons, as required</p> <p>5.5.Prepare report for the customer detailing work undertaken and technical or regulatory requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the repair of deck, hull and cabin equipment and fittings, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- vessel classification, component type and identification
- principles and application of mechanical, hydraulic, electrical and electronic principles, as applicable to cabin and deck equipment
- properties and use of repair materials and products used in repair procedures
- inspection techniques
- types of materials used in deck, hull and cabin equipment and fittings
- repair methods related to deck, hull and cabin equipment and fittings and the relationship of these parts and fittings to the integrity of the vessel
- use and application of testing, measuring and specialised servicing equipment
- recommissioning requirements and specifications as specified by the manufacturer and component supplier, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the

**REQUIRED SKILLS AND KNOWLEDGE**

- repair of deck, hull and cabin equipment and fittings
- organisational policies and procedures, including quality, reporting and recording procedures, related to the repair and recommissioning of deck, hull and cabin equipment and fittings

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- repair and recommission and test a range of deck, hull and cabin equipment and fittings to manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

##### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - deck, hull and cabin equipment and fittings requiring repair
  - materials relevant to the repair of deck, hull and cabin equipment and fittings
  - equipment, hand and power tools appropriate to the repair of deck, hull and cabin equipment and fittings

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Equipment and fittings</b>	<p>Equipment and fittings may include:</p> <ul style="list-style-type: none"> <li>• fittings (bollards, ferrules, runners, clamps, cleats, turnbuckles and press studs)</li> <li>• winches and capstans</li> <li>• bow and stern rails, rudder, and steering</li> </ul>

<b>RANGE STATEMENT</b>	
	bushes and bearings <ul style="list-style-type: none"> <li>• fishing rods and bait boxes</li> <li>• cabin fixtures</li> </ul>
<b>Repairs</b>	Repairs may include: <ul style="list-style-type: none"> <li>• wood repairs</li> <li>• plastic repairs</li> <li>• composite material repairs</li> <li>• aluminium repairs</li> <li>• steel repairs</li> <li>• glass repairs</li> <li>• low voltage wiring and lighting repairs</li> <li>• functional operation/testing (e.g. water and tank)</li> </ul>
<b>Recommissioning methods</b>	Recommissioning methods may include: <ul style="list-style-type: none"> <li>• engine system inspection</li> <li>• engine system commissioning</li> <li>• reading service data</li> <li>• compiling reports</li> <li>• testing, inspecting, adjusting, cleaning, and repairing components and systems</li> <li>• equipment and fittings inspection</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>persons</p> <ul style="list-style-type: none"> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURRTA3006 Water test a vessel

### Modification History

Release	Comment
Release 1	Replaces AURR346931A Water test a vessel Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to water test a vessel so as to meet specific customer performance specifications and ensure conformity to statutory regulations.</p> <p>It requires the ability to establish customer requirements, conduct pre-water safety inspection, water test and repair failed system and components, and complete work processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the water testing of a vessel after service, repair or installation work to ensure that the work meets specific customer performance specifications and conformity to statutory regulations.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1.Establish vessel configuration performance to be checked with customer 1.2.Select test procedure and equipment required for water testing 1.3.Check manufacturer and component supplier specifications 1.4.Check equipment and tools for safe and effective operation 1.5.Locate workplace health and safety (WHS) requirements, including personal safety needs, for the work activity
2. Conduct pre-water test safety inspection	2.1.Check safety of vessel according to industry regulations and guidelines, WHS and environmental legislation, and enterprise policies and procedures 2.2.Repair systems and components that fail the safety inspection prior to vessel leaving mooring
3. Water test vessel	3.1.Test and document engine performance 3.2.Test and document propulsion unit 3.3.Test and document hull and hull fittings 3.4.Compare water test performance data with manufacturer and component supplier specifications 3.5.Prepare customer test report and recommend any additional repairs and/or modifications required 3.6.Present vessel to customer as required by workplace procedures 3.7.Carry out all activities according to industry regulations and guidelines, WHS and environmental legislation, and enterprise policies and/or procedures
4. Clean up work area and maintain equipment	4.1.Collect and store material that can be reused 4.2.Remove waste and scrap following workplace procedures 4.3.Clean and inspect equipment and work area for serviceable condition in accordance with workplace procedures 4.4.Tag unserviceable equipment and faults identified in accordance with workplace requirements 4.5.Complete operator maintenance in accordance with manufacturer and component supplier specifications and site procedures

ELEMENT	PERFORMANCE CRITERIA
	4.6.Maintain tooling and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to safety and water testing a vessel, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- vessel, component and system performance assessment standards based on manufacturer and component supplier specifications and regulatory requirements
- vessel operating systems, components and fittings
- inspection techniques
- test report compilation and presentation
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to water testing a vessel so as to meet specific customer performance specifications and conformity to statutory regulations
- organisational policies and procedures, including quality, reporting and recording procedures, related to water testing a vessel



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate
- complete preparatory activity in a systematic manner
- conduct water testing of configuration and vessel in accordance with workplace and manufacturer and component supplier requirements for a range of vessels
- accurately record and interpret the test data for a range of vessel testings
- complete the testing within workplace timeframes
- present equipment to customer in compliance with workplace requirements
- complete the configuration checking within workplace timeframes.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - appropriate vessels for water testing
  - materials relevant to the water testing of vessels
  - equipment, hand and power tools appropriate to the water testing of vessels

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Water testing</b>	<p>Water testing may include:</p> <ul style="list-style-type: none"> <li>• testing engine performance by operating the engine through the full operating range</li> <li>• testing propulsion unit by operating through the full range of speeds and directions</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• testing hull and hull fittings by operating through the full range of performance conditions</li> <li>• testing to establish that current configuration is performing to manufacturer and component supplier specification</li> <li>• testing components</li> <li>• checking hull performance</li> <li>• checking faults as referred by the customer</li> </ul>
<b>Factors influencing vessel performance</b>	<p>Factors influencing vessel performance may include:</p> <ul style="list-style-type: none"> <li>• hull design</li> <li>• engine and hull match</li> <li>• engine propeller match</li> <li>• engine set-up</li> <li>• aerodynamics</li> <li>• vessel type, size, age, modifications, developmental and additions to existing vessel</li> <li>• engine type, size, single or multi</li> <li>• propulsion unit installed propeller or jet drive</li> <li>• hull type, including planing, displacement, single, multi-hull and hull fittings</li> <li>• variance between performance data and specifications</li> <li>• climatic (e.g. time of day, saltwater or freshwater, coastal, estuary or marine, water depth and weather)</li> </ul>
<b>Safety check of vessel</b>	<p>Safety check of vessel may include:</p> <ul style="list-style-type: none"> <li>• auditing vessel safety equipment</li> <li>• visually inspecting systems and components for conformity to manufacturer and component supplier specification</li> <li>• inspecting for conformity to regulations</li> <li>• adequate fuel and freshwater for journey</li> </ul>
<b>Test report</b>	<p>Test report may include:</p> <ul style="list-style-type: none"> <li>• recommendations for repairs and/or modifications</li> <li>• component conformity to manufacturer and supplier specifications</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• performance enhancing components which may satisfy the customer requirement</li> <li>• conformity to and implications of local, state and territory regulations and laws which may influence customer decisions</li> <li>• component manufacturer and component supplier warranty considerations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• testing equipment, including multimeters</li> <li>• power tooling</li> <li>• air tooling</li> <li>• specialist tooling and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current boating licence</li> </ul>
<b>Legislative requirements</b>	Legislative requirements are to be in accordance

<b>RANGE STATEMENT</b>	
	<p>with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURRTA5007 Analyse and evaluate light marine hydraulic system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT573593A Analyse and evaluate light marine hydraulic system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate light marine hydraulic systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning light marine hydraulic systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Light marine hydraulic system/components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary light marine hydraulic systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- basic hydraulic theory covering pressure, flow and force.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- mechanical theory covering the concepts and principles of mechanical, systems and levers.
- detailed knowledge of the types, characteristics, functions and limitations of hydraulic steering.
- detailed knowledge of the types, characteristics, functions and limitations of power steering for inboard and outboard systems.
- detailed knowledge of the types, characteristics, functions and limitations of power trim and tilt systems for outboard and stern drive units.
- general knowledge of boat drive and steering forces.
- general knowledge of the theory of diagnosis, including concept, design and planning.

**REQUIRED SKILLS AND KNOWLEDGE**

- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Complete failure analyses on a minimum of three different light marine hydraulic systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
- Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different light marine hydraulic systems.
- Document and report the diagnostic process and findings and recommended rectification for the above.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, light marine hydraulic systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

#### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of

**EVIDENCE GUIDE**

	<p>compliance of the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Marine hydraulic systems</b>	Marine hydraulic systems to be covered in this unit are to include power assisted steering, hydraulic steering, bow thrusters, trim tabs, tilt and trim systems and winches.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, environmental legislation, health regulations, manual handling procedures and organisation insurance</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>requirements.</p> <ul style="list-style-type: none"> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include pressure gauges and may include valve pressure testing equipment
<b>Tests</b>	Tests to be conducted are to include stroke times for trim and tilt operation, leak down and creep, and full load water testing.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to light marine hydraulic systems.</li> <li>• Marine industry regulations.</li> <li>• Marine industry publications related to emerging marine hydraulic system technology and technology changes.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURRTA5008 Analyse and evaluate light marine hull performance and stability system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT573893A Analyse and evaluate light marine hull performance and stability system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate light marine hull performance and stability systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning light marine hull performance systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Light marine hull performance system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary light marine hull performance systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- light marine terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, function, operations and characteristics of marine two-stroke, four-stroke and diesel engines.
- detailed knowledge of marine engine installation and rigging techniques.
- detailed knowledge of propeller selection techniques and procedures.
- detailed knowledge of boat trimming methods and planing aspects
- detailed knowledge of marine hull performance and design characteristics.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions and operations of diagnostic testing

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
equipment. <ul style="list-style-type: none"><li>• general knowledge of marine engine digital computing systems.</li><li>• general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.</li></ul>

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three different light marine hull performance systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different light marine hull performance systems.</li> <li>• Document and report the diagnostic process and findings and recommended rectification for two of the above.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, operational light marine hull performance systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<b>Method of assessment</b>	<p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process.</p> <p>Direct evidence may include certification of compliance of</p>

## EVIDENCE GUIDE

	<p>the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Total systems</b>	Total systems to be covered in this unit are to include the boat and engine combination as well as boat trimming systems, boat loading and fitted accessories.
<b>Boats</b>	Boats are to include inboard and outboard propelled vessels, including twin engine installations, which are fifty horsepower or above. They can be either two-stroke, four-stroke or diesel.
<b>Failures</b>	Failures covered by this unit are to include engine

<b>RANGE STATEMENT</b>	
	(poor performance, poor selection, incorrect fitting, overloading, overpowering), propeller selection (size, pitch, material and application), hull faults and stress (transom rot, delamination, hook, rocker, power hook, surface finish and design), mounting (noise, vibration, hardness).
<b>Boat performance</b>	Boat performance and control faults covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operation.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include compression gauges, computer-based diagnostic system, straight edges, engineer's protractor or inclinometer, tape measure, tachometer, feeler gauges, analogue and digital multimeter, pressure gauges, stethoscope, temperature gauges, timing lights, torque gauges, verniers, hand and power tooling, engine alignment bar, transom compass and drilling jig.
<b>Tests</b>	Tests to be conducted are to include engine performance and maximum speed, propeller matching, hull performance and stability water

<b>RANGE STATEMENT</b>	
	tests, water flow and temperature, hull integrity, fuel and oil consumption.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to marine installation guidelines.</li> <li>• Marine industry legislation/regulations.</li> <li>• Marine industry publications related to emerging engine/hull system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURRTD3001 Diagnose and repair marine steering systems

### Modification History

Release	Comment
Release 1	Replaces AURR346267A Diagnose and repair marine steering systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to diagnose and repair wire/rope, push pull cable, hydraulic and chain marine steering systems to a safe working condition.</p> <p>It requires the ability to identify and confirm work requirements, diagnose and repair marine steering systems and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the diagnosis and repair of steering systems on boats and vessels in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Diagnose faults	2.1. Develop a diagnosis strategy 2.2. Undertake tests in accordance with workplace procedures and manufacturer and component supplier specifications 2.3. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance 2.4. Decide upon a plan of action to rectify faults 2.5. Document results, including evidence, relevant information and recommendations 2.6. Forward report to persons for action in accordance with workplace procedures 2.7. Finalise repair requirements
3. Repair rope, cable, chain systems and associated components	3.1. Perform repair and adjustment operations in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 3.2. Operate rope, cable and chain system through full operating range, noting test results and any non-conformity 3.3. Make required adjustments and re-test 3.4. Check that protective guards, cowlings and safety features are in place according to workplace expectations 3.5. Determine the need for water testing
4. Clean up work area and finalise work	4.1. Clean and inspect equipment and tooling according to workplace requirements 4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 4.3. Finalise and process work completion

ELEMENT	PERFORMANCE CRITERIA
	<p>documentation, update customer and warranty information and give to appropriate persons, as required</p> <p>4.4.Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the diagnosis and repair of marine steering systems, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements, calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- types of rope, cable and chain systems
- purpose and requirements of rope, cable and chain systems and their relationship to vessel and mooring systems
- materials and construction of materials used in rope, cable and chain systems
- measuring and testing procedures
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the diagnosis and repair of marine steering systems, including the safe working load of ropes, chains and cables
- organisational policies and procedures, including quality, reporting and recording procedures, related to the diagnosis and repair of marine steering systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of marine steering systems to workplace and manufacturer and component supplier requirements
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - marine steering systems in need of repair
  - equipment, hand and power tools appropriate to the diagnosis and repair of vessel rope, cable and chain systems
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of

**EVIDENCE GUIDE**

	<p>workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Repair methods**

Repair methods may include:

- isolation of faults
- dismantling, inspection and evaluation
- replacement of components parts
- assembly
- completion of operational tests
- completion of records

**Marine engines**

Marine engines may include:

- 2-stroke petrol

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current boating licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURRTE1001 Prepare outboard engines for wet-run testing

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to prepare outboard engines for wet-run testing.</p> <p>The unit involves identifying and confirming work requirements, preparing engine for testing procedure, performing wet run testing, and completing work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to the testing of an outboard engine out of water in a marine maintenance environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to wet run an outboard engine	<ul style="list-style-type: none"><li>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to wet-running outboard engines</li><li>1.2. <b>Workplace Health and Safety (WHS) requirements</b> are observed and applied throughout the work</li><li>1.3. Procedures and information are sourced and interpreted</li><li>1.4. Test method is selected for particular application</li><li>1.5. Appropriate <b>tools and equipment</b> are selected and prepared</li></ul> Work area is located and prepared
2. Set up testing equipment	<ul style="list-style-type: none"><li>2.1. <b>Engine systems'</b> settings are determined for <b>wet-run testing</b> according to manufacturer requirements</li><li>2.2. Testing equipment is attached to engine according to manufacturer and component supplier specifications</li></ul>
3. Perform wet-run test	<ul style="list-style-type: none"><li>3.1. Wet-run test is commenced by starting and operating engine according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</li><li>3.2. Engine test performance is monitored</li><li>3.3. <b>Engine test results</b> are compared with manufacturer and component supplier specifications</li><li>3.4. Tests are conducted giving consideration to workplace <b>environmental requirements</b></li></ul>
4. Clean up work area and finalise work processes	<ul style="list-style-type: none"><li>4.1. Tools and equipment are checked and stored according to workplace expectations</li><li>4.2. Work area is cleaned and tidied according to workplace procedures</li><li>4.3. Workplace documentation is completed according to workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- literacy skills to:
  - read and follow manufacturer information
  - read and follow information in standard operating procedures and testing instructions
  - report and record actions
- numeracy skills to interpret gauges and measuring equipment
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities which implement and follow standard workplace procedures
  - identify environmental constraints associated with task
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - locate and identify appropriate tools and equipment
  - locate technical information
  - follow basic workplace documentation, such as operating procedures
  - recognise limitations and seek timely advice
- technical skills to select and use tools and equipment appropriate for wet-run testing of marine engines
- technology skills to use workplace technology to assist with work practices

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to marine engine wet-run testing
- types and classifications of marine engines and system components
- starting procedures of outboard engines
- testing procedures appropriate to wet running outboard engines
- environmental considerations of wet run testing of outboard engines
- workplace documentation policies and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- wet-run test a minimum of three marine outboard engines
- complete workplace documents and clean-up requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice

The following resources must be made available:

- workplace location or simulated workplace
- operational marine outboard engines, including 2 and 4 stroke type
- equipment and hand tools appropriate to the wet-run testing of outboard engines
- engine specifications and work instructions
- workplace documentation.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of an holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• outboard engine wet run methods, processes and equipment</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Tools and equipment</b> may include:</li> </ul>	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• flushing or wet-run fittings</li> <li>• water hose and fittings</li> <li>• specialist tools and equipment</li> </ul>
<b>Engine systems</b> may include:	<ul style="list-style-type: none"> <li>• 2 or 4 stroke</li> <li>• outboard engines fitted or not fitted to a vessel</li> </ul>
<b>Wet-run testing</b> may include:	<ul style="list-style-type: none"> <li>• using lifting equipment to locate engine for test</li> <li>• attaching flushing device or fitting</li> <li>• checking security of fittings</li> <li>• connecting remote water supply</li> <li>• regulating water supply for test</li> <li>• checking throttle / choke / fast idle settings</li> <li>• making battery connections</li> </ul>
<b>Engine test results</b> may include:	<ul style="list-style-type: none"> <li>• test report recommendations for repairs and/or modifications</li> <li>• component conformity to manufacturer and supplier specifications</li> <li>• component manufacturer and component supplier warranty considerations</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Environmental***

***requirements*** may include:

- noise
- water use and runoff
- ensuring exhaust emissions are removed as required by state and territory laws
- clean-up management

**Unit Sector(s)**

<b>Competency field</b>	Marine
<b>Unit sector</b>	Technical - Engines

**Custom Content Section**

Not applicable.

## AURRTE2002 Service outboard engines and components

### Modification History

Release	Comment
Release 1	Replaces AURR201103A Service outboard engines and components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service outboard engines and components.</p> <p>It requires the ability to identify and confirm work requirements, service marine engines and to complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake and document the servicing of two and four cycle outboard engines and components in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source service procedures and relevant workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Decide service method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.6. Set up work area
2. Service engines and engine components	2.1. Conduct service in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Conduct pre-start checks, make required adjustments and re-test 2.3. Apply appropriate lubricants to engine 2.4. Check that protective guards, cowlings and safety features are in place according to workplace expectations 2.5. Determine the need for water testing
3. Clean up work area and finalise work	3.1. Seal engine orifices against ingress of foreign matter 3.2. Clean and store engine according to workplace requirements 3.3. Clean and inspect equipment and tooling according to workplace requirements 3.4. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.5. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required 3.6. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing of outboard engines and components, including use of workplace computerised technology for the testing, reporting and recording of results
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to interpret technical information and specifications and to prepare reports
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles, construction and types of two and four cycle outboard engines
- servicing procedures and methodologies for different engines types
- minor adjustment procedures for different engines types
- types of lubricants and application methods
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides related to the servicing of marine engines and engine components
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the servicing of outboard engines and components
- organisational policies and procedures, including quality requirements, reporting and recording procedures, related to servicing outboard engines and components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service a range of two and four cycle outboard engines and components to workplace and manufacturer requirements and within workplace timeframe
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate worksite
  - a range of marine two and four cycle engines and components requiring servicing
  - specifications and work instructions
  - equipment, hand and power tooling appropriate to repairing marine engines
  - relevant information, including manufacturer specifications.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Marine engines**

Marine engines may include:

- 2-stroke petrol and diesel
- 4-stroke petrol and diesel

**Vessels**

Vessels may include:

- single or multi-hull
- inboard or outboard drive

<b>RANGE STATEMENT</b>	
<b>Servicing methods</b>	<p>Servicing methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• minor adjustments and operational testing</li> <li>• replacement of fluids and filters</li> </ul>
<b>Pre-start checking procedures</b>	<p>Pre-start checking procedures may include:</p> <ul style="list-style-type: none"> <li>• running to operating temperature</li> <li>• priming oil</li> <li>• checking engine fluid levels, including lubrication and coolant</li> <li>• checking fuel system for leaks</li> <li>• checking for abnormal noises</li> <li>• checking for pressures</li> <li>• checking gauges and warning devices for operation</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> <li>• lubricating equipment</li> <li>• measuring equipment</li> <li>• pressure gauges</li> <li>• vacuum gauges</li> <li>• manufacturer's special stools</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>

**RANGE STATEMENT****Information/documents**

Information/documents may include:

- verbal, written and graphical instructions issued by authorised internal and external persons
- parts listing prices and catalogues
- inventory systems
- Repair Times manuals
- material safety data sheets (MSDS)
- diagrams or sketches
- engineer's design specifications and instructions
- manufacturer specifications
- industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)
- industry codes of practice
- Australian standards
- workplace specifications and requirements
- current driver's licence

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- duty of care

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian Standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURRTE2003 Service inboard engines and components

### Modification History

Release	Comment
Release 1	Replaces AURR201104A Service inboard engines and components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service inboard engines and components.</p> <p>It requires the ability to identify and confirm work requirements, service the inboard engines and to complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake and document the servicing of inboard engines and components in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source service procedures and relevant workshop manuals and manufacturer's information 1.4. Check and prepare tools, equipment and materials 1.5. Decide service method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.6. Set up work area
2. Service engine and engine components	2.1. Conduct service in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Conduct pre-start checks, make required adjustments and re-test 2.3. Apply appropriate lubricants to engine 2.4. Check that protective guards, cowlings and safety features are in place according to workplace expectations 2.5. Determine the need for water testing
3. Clean up work area and finalise work	3.1. Seal engine orifices against ingress of foreign matter 3.2. Clean engine according to workplace requirements 3.3. Clean and inspect equipment and tooling according to workplace requirements 3.4. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.5. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required 3.6. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing of inboard engines and components, including use of workplace computerised technology for the testing, reporting and recording of results
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to interpret technical information and specifications and to prepare reports
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles, construction and types of inboard engines
- servicing procedures and methodologies for different engines types
- minor adjustment procedures for different engines types
- types of lubricants and application methods
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides related to the servicing of marine engines and engine components
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the servicing of inboard engines and components
- organisational policies and procedures, including quality requirements, reporting and recording procedures related to servicing inboard engines and components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service a range of marine inboard engines and components to workplace and manufacturer requirements and within workplace timeframe
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate worksite
  - a range of marine inboard engines and components requiring servicing
  - specifications and work instructions
  - equipment, hand and power tooling appropriate to repairing marine engines
  - relevant information, including manufacturer specifications.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Inboard marine engines**

Marine engines may include:

- 2-stroke petrol and diesel
- 4-stroke petrol and diesel

**Vessels**

Vessels may include:

- single or multi-hull
- inboard or outboard drive

<b>RANGE STATEMENT</b>	
<b>Servicing methods</b>	Servicing methods may include: <ul style="list-style-type: none"><li>• on- and off-site repairs</li><li>• minor adjustments and operational testing</li><li>• replacement of fluids and filters</li></ul>
<b>Pre-start checking procedures</b>	Pre-start checking procedures may include: <ul style="list-style-type: none"><li>• running to operating temperature</li><li>• priming oil</li><li>• checking engine fluid levels, including lubrication and coolant</li><li>• checking fuel system for leaks</li><li>• checking for abnormal noises</li><li>• checking for pressures</li><li>• checking gauges and warning devices for operation</li></ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• hand tools</li><li>• testing equipment, including multimeters</li><li>• power tools</li><li>• air tools</li><li>• specialist tools and equipment</li><li>• lubricating equipment</li><li>• measuring equipment</li><li>• pressure gauges</li><li>• vacuum gauges</li><li>• manufacturer's special stools</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• spare parts</li><li>• lubricants</li><li>• fluids</li><li>• cleaning materials</li></ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"><li>• operational risk assessment and treatments</li><li>• toxic substances</li><li>• electrical safety</li><li>• machinery movement and operation</li><li>• manual and mechanical lifting and shifting</li><li>• working in proximity to others</li></ul>

<b>RANGE STATEMENT</b>	
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• Repair Times manuals</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• industry codes of practice</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current driver's licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• first aid equipment</li><li>• hazard and risk control</li><li>• elimination of hazardous materials and substances</li><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li><li>• road rules</li><li>• safe driving policy</li></ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian Standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURRTE3005 Diagnose and repair marine electrical systems and components

### Modification History

Release	Comment
Release 1	Replaces AURE320066B Diagnose and repair marine electrical systems and components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to diagnose and repair marine electrical systems and components, including dash instrumentation, switch and fuse panels, bilge pumps and lighting.</p> <p>It requires the ability to identify and confirm work requirements, diagnose and repair marine inboard transmissions and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the diagnosis and repair of electrical systems and components in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Confirm nature and scope of work to be carried out</li><li>1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work</li><li>1.3. Access and interpret repair method, workshop manuals and manufacturer information</li><li>1.4. Check and prepare tools, equipment and materials</li><li>1.5. Set up work area</li></ul>
2. Diagnose faults	<ul style="list-style-type: none"><li>2.1. Develop a diagnosis strategy</li><li>2.2. Undertake system tests in accordance with workplace procedures and manufacturer and component supplier specifications</li><li>2.3. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance</li><li>2.4. Decide upon a plan of action to rectify faults</li><li>2.5. Document results, including evidence, relevant information and recommendations</li><li>2.6. Forward report to persons for action in accordance with workplace procedures</li><li>2.7. Finalise repair requirements</li></ul>
3. Repair marine electrical systems and components	<ul style="list-style-type: none"><li>3.1. Perform repair and adjustment operations in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices</li><li>3.2. Determine the need for water testing</li></ul>
4. Clean up work area and finalise work	<ul style="list-style-type: none"><li>4.1. Clean and inspect equipment and tooling according to workplace requirements</li><li>4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements</li><li>4.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as required</li><li>4.4. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the diagnosis and repair of marine electrical system components, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles and construction of marine dash instrumentation, switch and fuse panels, bilge pumps and lighting
- electrical principles and procedures applicable to repair procedures
- wiring diagram interpretation
- diagnostic and repair procedures, including component and assembly removal and placement
- measuring and testing procedures
- construction and operation of jet propulsion drive systems
- types of lubricants and their application
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and

**REQUIRED SKILLS AND KNOWLEDGE**

codes of practice, including WHS, personal safety and environment, relevant to diagnosing and repairing of marine electrical system components

- organisational policies and procedures, including quality, reporting and recording procedures, related to diagnosing and repairing of marine electrical system components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- test marine electrical systems and components
- complete diagnosis of faults correctly
- diagnose and repair a range of marine electrical systems and components to manufacturer and component supplier requirements, including dash instrumentation, switch and fuse panels, bilge pumps and lighting within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - faulty marine electrical systems and components

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• equipment, hand and power tooling appropriate to the diagnosis and repair of faults in marine electrical system components</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Marine electrical systems</b>	Marine electrical systems may include low voltage:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"><li>• switch and fuse panels</li><li>• bilge water, grey water, black water and freshwater pumps</li><li>• pump control systems (e.g. float switches)</li><li>• battery motorised ventilation</li><li>• solar systems</li><li>• carbon monoxide gas alarm systems</li><li>• low voltage charging stations</li><li>• lighting (e.g. incandescent, fluorescent and LED)</li></ul>
<b>Marine engines</b>	Marine engines may include: <ul style="list-style-type: none"><li>• 2-stroke petrol</li><li>• 4-stroke diesel and petrol</li></ul>
<b>Vessels</b>	Vessels may include: <ul style="list-style-type: none"><li>• single or multi-hull</li><li>• inboard or outboard drive</li></ul>
<b>Repair methods</b>	Repair methods may include: <ul style="list-style-type: none"><li>• isolation of faults</li><li>• dismantling, inspection and evaluation</li><li>• replacement of components parts</li><li>• assembly</li><li>• completion of operational tests</li><li>• completion of records</li></ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• hand tools</li><li>• testing equipment, including multimeters</li><li>• power tools</li><li>• air tools</li><li>• specialist tools and equipment</li></ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"><li>• operational risk assessment and treatments</li><li>• toxic substances</li><li>• electrical safety</li><li>• machinery movement and operation</li><li>• manual and mechanical lifting and shifting</li><li>• working in proximity to others</li></ul>

<b>RANGE STATEMENT</b>	
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>substances</li><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li><li>• road rules</li><li>• safe driving policy</li></ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Engines
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## AURRTE3006 Diagnose and repair outboard engines and components

### Modification History

Release	Comment
Release 1	Replaces AURR301102A Diagnose and repair outboard engines and components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to diagnose and repair two and four cycle outboard marine engines and components.</p> <p>It requires the ability to interpret work requirements, diagnose and repair two and four cycle outboard engines and components and finalise work processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the repair of two and four cycle outboard engines and components in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for engine repair work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Conduct engine system tests and analyse results	2.1. Develop a diagnosis strategy 2.2. Undertake engine system tests in accordance with workplace procedures and manufacturer and component supplier specifications 2.3. Start and run engine to operating temperature and check for leaks, abnormal noises and pressures 2.4. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance 2.5. Document results, including evidence, relevant information and recommendations 2.6. Forward report to persons for action in accordance with workplace procedures 2.7. Finalise repair requirements
3. Dismantle engine and components	3.1. Dismantle engine and components in a logical sequence without causing damage 3.2. Clean engine and arrange components ready for inspection 3.3. Measure and compare components against supplier specifications and tolerances 3.4. Decide repair method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 3.5. Source parts as required 3.6. Determine and arrange outsourcing of third-party repair
4. Repair and rebuild engine and engine components	4.1. Perform repair and rebuild operations in accordance with workplace procedures and manufacturer and component supplier specifications and tolerances 4.2. Re-assemble engine and components following manufacturer and component supplier procedures

ELEMENT	PERFORMANCE CRITERIA
	<ul style="list-style-type: none"><li>4.3.Measure running clearances against component manufacturer and supplier specifications</li><li>4.4.Conduct pre-start checks, make required adjustments and re-test</li><li>4.5.Apply appropriate lubricants to engine</li><li>4.6.Check that protective guards, cowlings and safety features are in place according to workplace expectations</li><li>4.7.Perform hot run testing in test tank or at launching ramp</li><li>4.8.Complete workplace documentation and deal with as relevant to repair outcomes</li></ul>
5. Prepare engine for delivery to customer or storage	<ul style="list-style-type: none"><li>5.1.Seal engine orifices against ingress of foreign matter</li><li>5.2.Determine the need for water testing</li><li>5.3.Make final inspection to ensure protective features are in place and according to workplace requirements</li><li>5.4.Clean and store engine according to workplace requirements</li><li>5.5.Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required</li><li>5.6.Clean work area, dispose of waste and store tools and equipment in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the testing, diagnosis and repair of marine engines and components, including use of specialist tooling, measuring equipment, use of communication devices and workplace technology to record results of repair work
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to interpret technical information and specifications, and to prepare reports
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles and construction of two and four cycle outboard engines and components
- repair and rebuild procedures and methodologies for different engines types
- testing and adjustment procedures for different engine types
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to testing, diagnosing and repairing two and four cycle outboard engines and components
- organisational policies and procedures, including quality requirements, reporting and recording procedures, WHS regulations and requirements, equipment, material

**REQUIRED SKILLS AND KNOWLEDGE**

and personal safety requirements related to testing, diagnosing and repairing two and four cycle outboard engines and components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select repair methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- repair and rebuild a range of two and four cycle outboard engines from single cylinder to current multi-cylinder engines and their components to manufacturer and component specifications
- complete the repair of two and four cycle outboard engine and components within workplace timeframes
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate worksite
  - range of two and four cycle marine engines and components
  - specifications and work instructions
  - equipment, hand and power tooling appropriate to repairing marine engines
  - relevant information, including manufacturer

<b>EVIDENCE GUIDE</b>	
	specifications.
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Marine engines</b>	<p>Marine engines may include:</p> <ul style="list-style-type: none"> <li>2-stroke petrol</li> <li>4-stroke diesel and petrol</li> </ul>
<b>Repair and rebuild</b>	<p>Repair and rebuild may include:</p>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"><li>• on- and off-site repairs</li><li>• dismantling and reassembly</li><li>• repair and replacement of components</li><li>• testing and adjustments</li></ul>
<b>Pre-start checking procedures</b>	Pre-start checking procedures may include: <ul style="list-style-type: none"><li>• running to operating temperature</li><li>• priming oil</li><li>• checking engine fluid levels, including lubrication and coolant</li><li>• checking fuel system for leaks</li><li>• checking for abnormal noises</li><li>• checking for pressures</li><li>• checking gauges and warning devices for operation</li></ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• specific service and general workshop equipment and tooling</li><li>• measuring equipment</li><li>• lubricating equipment</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• spare parts</li><li>• lubricants</li><li>• fluids</li><li>• cleaning materials</li></ul>
<b>Environmental work practices</b>	Environmental work practices may include: <ul style="list-style-type: none"><li>• use of renewable, recyclable, reusable and recoverable resources</li><li>• minimisation and appropriate disposal of waste and packaging</li><li>• prevention of contaminants and wastewater entering stormwater drains, waterways or marine environments</li><li>• minimisation and containment of hazards to air quality</li><li>• minimisation of noise generating activities</li><li>• safe storage of parts and components containing environmentally hazardous material</li><li>• provision of appropriate storage or recycling</li></ul>

<b>RANGE STATEMENT</b>	
	<p>containers for solid and liquid waste</p> <ul style="list-style-type: none"> <li>• use of impervious paved area for surface cleaning, engine degreasing and preparation</li> <li>• use of an approved parts washer</li> <li>• use of drip trays under vehicles</li> <li>• cleaning hands over drains connected to an oil/water separator or liquid waste collection drums</li> <li>• minimisation of vehicle exhausts and emissions and provision of ventilated work areas</li> <li>• use of a ventilated, enclosed booth or chamber for spray painting and abrasive sanding</li> <li>• recovering CFCs, HCFCs and blends from air conditioning systems for recycling or approved disposal</li> <li>• prevention of tributyltin, arsenic, mercury and DDT entering the marine environment</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current boating licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> </ul>

**RANGE STATEMENT**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• reporting and recording procedures</li></ul> |
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**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## AURRTE3007 Diagnose and repair inboard engines and components

### Modification History

Release	Comment
Release 1	Replaces AURR301105A Diagnose and repair inboard engines and components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to diagnose, repair and rebuild inboard marine engines and components.</p> <p>It requires the ability to interpret work requirements, diagnose, repair and rebuild two and four cycle inboard engines and components and finalise work processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the repair of two and four cycle inboard engines and components in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for engine repair work	<ul style="list-style-type: none"><li>1.1. Confirm nature and scope of work to be carried out</li><li>1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work</li><li>1.3. Access and interpret repair method, workshop manuals and manufacturer information</li><li>1.4. Check and prepare tools, equipment and materials</li><li>1.5. Set up work area</li></ul>
2. Conduct engine system tests and analyse results	<ul style="list-style-type: none"><li>2.1. Develop a diagnosis strategy</li><li>2.2. Undertake engine system tests in accordance with workplace procedures and manufacturer and component supplier specifications</li><li>2.3. Start and run engine to operating temperature and check for leaks, abnormal noises and pressures</li><li>2.4. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance</li><li>2.5. Document results, including evidence, relevant information and recommendations</li><li>2.6. Forward report to persons for action in accordance with workplace procedures</li><li>2.7. Finalise repair requirements</li></ul>
3. Dismantle engine and components	<ul style="list-style-type: none"><li>3.1. Dismantle engine and components in a logical sequence without causing damage</li><li>3.2. Clean engine and arrange components ready for inspection</li><li>3.3. Measure and compare components against supplier specifications and tolerances</li><li>3.4. Decide repair method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures</li><li>3.5. Source parts as required</li><li>3.6. Determine and arrange outsourcing of third-party repair</li></ul>
4. Repair and rebuild engine and engine components	<ul style="list-style-type: none"><li>4.1. Perform repair and rebuild operations in accordance with workplace procedures and manufacturer and component supplier specifications and tolerances</li><li>4.2. Re-assemble engine and components following manufacturer and component supplier procedures</li></ul>

ELEMENT	PERFORMANCE CRITERIA
	<ul style="list-style-type: none"><li>4.3.Measure running clearances against component manufacturer and supplier specifications</li><li>4.4.Conduct pre-start checks, make required adjustments and re-test</li><li>4.5.Apply appropriate lubricants to engine</li><li>4.6.Check that protective guards, cowlings and safety features are in place according to workplace expectations</li><li>4.7.Perform hot run testing in test tank or at launching ramp</li><li>4.8.Complete workplace documentation and deal with as relevant to repair outcomes</li></ul>
5. Prepare engine for delivery to customer or storage	<ul style="list-style-type: none"><li>5.1.Seal engine orifices against ingress of foreign matter</li><li>5.2.Determine the need for water testing</li><li>5.3.Make final inspection to ensure protective features are in place and according to workplace requirements</li><li>5.4.Clean and store engine according to workplace requirements</li><li>5.5.Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required</li><li>5.6.Clean work area, dispose of waste and store tools and equipment in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the testing, diagnosis and repair of marine inboard engines and components, including use of specialist tooling, measuring equipment, use of communication devices and workplace technology to record results of repair work
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to interpret technical information and specifications, and to prepare reports
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles and construction of two and four cycle inboard engines and components
- repair and rebuild procedures and methodologies for different engines types
- testing and adjustment procedures for different engine types
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to testing, diagnosing and repairing two and four cycle inboard engines and components
- organisational policies and procedures, including quality requirements, reporting and recording procedures, WHS regulations and requirements, equipment, material

**REQUIRED SKILLS AND KNOWLEDGE**

and personal safety requirements related to testing, diagnosing and repairing two and four cycle inboard engines and components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select repair methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- repair and rebuild a range of inboard engines and their components to manufacturer and component specifications within workplace timeframes
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate worksite
  - range of marine inboard engines and components
  - specifications and work instructions
  - equipment, hand and power tooling appropriate to repairing marine engines
  - relevant information, including manufacturer specifications.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Marine engines**

Marine engines may include:

- 2-stroke petrol
- 4-stroke diesel and petrol

**Repair and rebuild**

Repair and rebuild may include:

- on- and off-site repairs
- dismantling and reassembly
- repair and replacement of components
- testing and adjustments

**RANGE STATEMENT****Pre-start checking procedures**

Pre-start checking procedures may include:

- running to operating temperature
- priming oil
- checking engine fluid levels, including lubrication and coolant
- checking fuel system for leaks
- checking for abnormal noises
- checking for pressures
- checking gauges and warning devices for operation

**Tooling and equipment**

Tooling and equipment may include:

- specific service and general workshop equipment and tooling
- measuring equipment
- lubricating equipment

**Materials**

Materials may include:

- spare parts
- lubricants
- fluids
- cleaning materials

**Environmental work practices**

Environmental work practices may include:

- use of renewable, recyclable, reusable and recoverable resources
- minimisation and appropriate disposal of waste and packaging
- prevention of contaminants and wastewater entering stormwater drains, waterways or marine environments
- minimisation and containment of hazards to air quality
- minimisation of noise generating activities
- safe storage of parts and components containing environmentally hazardous material
- provision of appropriate storage or recycling containers for solid and liquid waste
- use of impervious paved area for surface cleaning, engine degreasing and preparation
- use of an approved parts washer

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• use of drip trays under vehicles</li> <li>• cleaning hands over drains connected to an oil/water separator or liquid waste collection drums</li> <li>• minimisation of vehicle exhausts and emissions and provision of ventilated work areas</li> <li>• use of a ventilated, enclosed booth or chamber for spray painting and abrasive sanding</li> <li>• recovering CFCs, HCFCs and blends from air conditioning systems for recycling or approved disposal</li> <li>• prevention of tributyltin, arsenic, mercury and DDT entering the marine environment</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current boating licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• confidentiality and privacy</li><li>• WHS</li><li>• the environment</li><li>• equal opportunity</li><li>• anti-discrimination</li><li>• duty of care</li></ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"><li>• personal protective equipment and clothing</li><li>• safety equipment</li><li>• first aid equipment</li><li>• hazard and risk control</li><li>• elimination of hazardous materials and substances</li><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li><li>• road rules</li><li>• safe driving policy</li></ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## AURRTE3008 Install marine engines, controls and instruments

### Modification History

Release	Comment
Release 1	Replaces AURR346131B Install marine engines, controls and instruments  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to install, test and commission inboard and outboard engines, system controls and instrumentation to a vessel.</p> <p>It requires the ability to identify and confirm work requirements, prepare for, install and commission engines, controls or instruments and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake installation, testing and commissioning of inboard and outboard engines, system controls and instrumentation to a vessel in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source installation procedures and relevant workshop manuals and manufacturer information 1.4. Determine installation method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.5. Set up work area
2. Install inboard/outboard engine	2.1. Carry out engine installation in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Test inboard or outboard engine for correct operation, make required adjustments and re-test 2.3. Determine the need for water testing
3. Install controls/steering system	3.1. Carry out installation in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 3.2. Test controls/steering system for correct operation, make required adjustments and re-test 3.3. Determine the need for water testing
4. Install instruments/accessories	4.1. Carry out installation in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 4.2. Test instruments and accessories for correct operation, make required adjustments and re-test 4.3. Identify the need for water testing
5. Commission the installation	5.1. Test vessel engine/steering system/controls/instruments or accessories under normal conditions for correct operation and in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices
6. Clean up work area and maintain	6.1. Make final inspection 6.2. Clean and inspect equipment and tooling according

ELEMENT	PERFORMANCE CRITERIA
equipment	<p>to workplace requirements</p> <p>6.3.Tag unserviceable equipment and faults identified in accordance with workplace requirements</p> <p>6.4.Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as required</p> <p>6.5.Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the installation of marine engines, controls and instruments, to perform diagnosis and repair actions, and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications, and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- construction and operating principles of inboard and outboard engines, control systems and instrumentation
- installation procedures
- measuring and testing procedures
- commissioning procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to installing marine engines, controls and instruments
- organisational policies and procedures, including quality, reporting and recording procedures, related to installing marine engines, controls and instruments



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- install and test prior to placing in service a minimum of three (3) inboard and outboard engines to workplace and manufacturer and component supplier requirements within workplace timeframes
- install and test prior to placing in service a minimum of three (3) controls and steering systems to workplace and manufacturer and component supplier requirements within workplace timeframes
- install and test prior to placing in service a minimum of three (3) instruments and accessories to workplace and manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>workplace location or simulated workplace</li> <li>materials relevant to the installation of marine engines, controls and steering, instruments and accessories</li> <li>equipment, hand and power tools appropriate to the installation of marine engines, controls and steering, instruments and accessories</li> <li>specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>RANGE STATEMENT</b>	
<b>Recommissioning</b>	Recommissioning may include: <ul style="list-style-type: none"><li>• engine system inspection</li><li>• reading service data</li><li>• compiling reports</li><li>• testing, inspecting, adjusting, cleaning, and repairing components and systems</li></ul>
<b>Installation</b>	Installation may include: <ul style="list-style-type: none"><li>• minor adjustments, alignment and operational testing</li><li>• functional operation</li><li>• functional operation and testing of components</li></ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• hand tools</li><li>• testing equipment, including multimeters</li><li>• power tools</li><li>• air tools</li><li>• specialist tools and equipment</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• spare parts</li><li>• lubricants</li><li>• fluids</li><li>• cleaning materials</li></ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"><li>• operational risk assessment and treatments</li><li>• toxic substances</li><li>• electrical safety</li><li>• machinery movement and operation</li><li>• manual and mechanical lifting and shifting</li><li>• working in proximity to others</li></ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"><li>• verbal, written and graphical instructions issued by authorised internal and external persons</li><li>• parts listing prices and catalogues</li><li>• inventory systems</li><li>• material safety data sheets (MSDS)</li></ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Engines
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## AURRTE3009 Recommission marine engine systems

### Modification History

Release	Comment
Release 1	Replaces AURR346760B Recommission marine engine systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to prepare a marine engine system for use after seasonal shutdown and storage.</p> <p>It requires the ability to identify and confirm work requirements, test and recommission engine system and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake the preparation of an engine system for use after seasonal shutdown and storage in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Confirm nature and scope of work to be carried out</li><li>1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices, applicable to the work</li><li>1.3. Access and interpret repair method, workshop manuals and manufacturer information</li><li>1.4. Check and prepare tools, equipment and materials</li><li>1.5. Set up work area</li></ul>
2. Recommission engine systems	<ul style="list-style-type: none"><li>2.1. Carry out recommissioning procedures in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices</li><li>2.2. Test engine systems and compare to manufacturer and component specifications</li><li>2.3. Determine and report engine systems which fail testing and gain rectification approval from customer</li><li>2.4. Repair and test failed systems</li><li>2.5. Commission engine system</li><li>2.6. Determine the need for water testing</li></ul>
3. Clean up work area and finalise work	<ul style="list-style-type: none"><li>3.1. Clean and inspect equipment and tooling according to workplace requirements</li><li>3.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements</li><li>3.3. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</li><li>3.4. Finalise and process work completion documentation and give to appropriate persons, as required</li><li>3.5. Prepare report for the customer detailing work undertaken and technical or regulatory requirements</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the preparation of an engine for use after seasonal shutdown and storage, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- mechanical, hydraulic, electrical and electronic principles and application
- engine system requirements and their relationship to vessel systems and associated components
- engine classification, system types and component identification
- safety precautions
- properties and use of servicing fluids, and lubricants and anti-corrosion products used in winterising procedures
- recommissioning requirements and specifications as specified by the manufacturer and component supplier, including workshop manuals and repair guides
- use and application of testing, measuring and specialised servicing equipment
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the preparation of an engine for use after seasonal shutdown and storage, including

**REQUIRED SKILLS AND KNOWLEDGE**

- power lifting requirements and licensing
- organisational policies and procedures, including quality, reporting and recording procedures, related to the preparation of an engine for use after seasonal shutdown and storage

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- recommission and test of a range of marine engine systems to manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - marine engine systems requiring recommissioning
  - equipment, hand and power tools appropriate to the recommissioning of engine systems
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Engine systems**

Engine systems may include:

- inboard or outboard
- 2- or 4-stroke
- single or multi-cylinder
- water or air cooled
- electrical or electronic
- remote or local controlled

**Fuel systems**

Fuel systems may include

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• petrol</li> <li>• diesel</li> <li>• gas</li> <li>• carburetion or fuel injection</li> <li>• manual or electric start</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Recommissioning</b>	<p>Recommissioning may include:</p> <ul style="list-style-type: none"> <li>• engine system inspection</li> <li>• reading service data</li> <li>• compiling reports</li> <li>• testing, inspecting, adjusting, cleaning, and repairing components and systems</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Engines
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## AURRTE3010 Water test engines in tanks

### Modification History

Release	Comment
Release 1	Replaces AURR346975B Water test engines in tanks Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to performance test an engine in a water tank.</p> <p>It requires the ability to identify and confirm work requirements, set up testing procedure, performance test an engine in a water tank and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake the performance testing of an engine in a water tank in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices, applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Set up testing equipment	2.1. Prepare engine for testing 2.2. Link testing equipment to engine in accordance with manufacturer and component supplier specifications 2.3. Carry out all activities according to industry regulations and guidelines, WHS and environmental legislation, and enterprise policies and procedures
3. Performance test engine	3.1. Conduct test by starting and operating engine through speed ranges as specified in test procedure 3.2. Document performance data during engine test sequence 3.3. Compare engine performance data to manufacturer and component supplier specifications 3.4. Prepare test reports and make recommendations for repairs and/or modifications
4. Clean up work area and finalise work	4.1. Clean and inspect equipment and tooling according to workplace requirements 4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 4.3. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures 4.4. Finalise and process work completion documentation and give to appropriate persons, as required

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to marine engine inspection and tank testing, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- marine engine and system components classifications and types
- electronic, electrical and hydraulic controls
- engine operating systems
- engine performance report compilation and presentation
- types and layout of service and/or repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to marine engine inspection and tank testing
- organisational policies and procedures, including quality, reporting and recording procedures, related to marine engine inspection and tank testing

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- performance test a minimum of three (3) ignition engines with fuel and temperature faults within workplace timeframes
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - faulty engines, including engines with fuel and temperature faults
  - equipment, hand and power tools appropriate to the water testing of engines in tanks
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Engine systems**

Engines systems may include:

- 2- or 4-stroke
- inboard or outboard engine
- fitted or not fitted to a vessel

**Prepare engine for testing**

Prepare engine for testing may include:

- using lifting equipment to locate engine in tank
- checking security of water tank
- ensuring exhaust emissions are removed as

<b>RANGE STATEMENT</b>	
	required by state and territory laws
<b>Test report</b>	<p>Test report may include:</p> <ul style="list-style-type: none"> <li>• recommendations for repairs and/or modifications</li> <li>• component conformity to manufacturer and supplier specifications</li> <li>• performance enhancing components which may satisfy the customer requirement</li> <li>• conformity to and implications of local, state and territory regulations and laws which may influence the customer decisions</li> <li>• component manufacturer and component supplier warranty considerations</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine,</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>Manufacturer's Association and US Coast Guard)</p> <ul style="list-style-type: none"> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current boating licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>

RANGE STATEMENT	
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Engines
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## AURRTE4011 Overhaul two and four cycle outboard engines

### Modification History

Release	Comment
Release 1	Replaces AURR401103A Overhaul two and four cycle outboard engines  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to overhaul two and four cycle outboard engines and components.</p> <p>It requires the ability to interpret work requirements, logically dismantle the engine system, overhaul and reassemble the engine and finalise work processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the overhauling of two and four cycle water cooled outboard engines with significant repair in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to carry out engine overhaul	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices, applicable to the work 1.3. Access and interpret overhaul method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Dismantle engine and components	2.1. Dismantle engine and components in a logical sequence without causing damage 2.2. Clean engine and arrange components ready for inspection 2.3. Measure and compare components against supplier specifications and tolerances 2.4. Decide serviceability and repair method of each component in accordance with WHS, environmental and industry regulations and guidelines, and enterprise procedures 2.5. Source replacement parts as required 2.6. Determine and arrange outsourcing of third-party repair
3. Overhaul and assemble engine and components	3.1. Perform overhaul operations in accordance with workplace procedures and manufacturer and component supplier specifications and tolerances 3.2. Re-assemble engine following manufacturer and component supplier procedures 3.3. Measure running clearances against component manufacturer and supplier specifications 3.4. Make the necessary adjustments 3.5. Apply appropriate lubricants to engine 3.6. Complete assembly of engine within established industry guidelines and timeframes and without causing damage to system or components
4. Undertake engine pre-start check	4.1. Mount engine securely in preparation for starting 4.2. Conduct pre-start checks, make required adjustments and re-test 4.3. Seal engine openings against ingress of foreign matter 4.4. Make final inspection to ensure protective features

ELEMENT	PERFORMANCE CRITERIA
	are in place and according to workplace requirements 4.5.Determine the need for water testing
5. Clean up work area and finalise work	5.1.Clean and store engine according to workplace requirements 5.2.Clean and inspect equipment and tooling according to workplace requirements 5.3.Tag unserviceable equipment and faults identified in accordance with workplace requirements 5.4.Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required 5.5.Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the overhaul of two and four cycle engines and components, including use of specialist tooling, measuring equipment, use of communication devices and workplace technology to record results of repair work
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to interpret technical information and specifications and to prepare reports
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity
- analytical skills to the level required to analyse technical information and issues related to the overhaul of two and four cycle engines and components

#### Required knowledge

Required knowledge includes:

- operating principles, construction and types of two and four cycle engines and components
- engine overhaul procedures and methodologies
- component evaluation methods
- dismantling, assembling and adjustment methods
- measuring, testing and adjustment procedures
- types of lubricants and application methods
- manufacturer and component supplier specifications and tolerances, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the

**REQUIRED SKILLS AND KNOWLEDGE**

- overhaul of two and four cycle engines and components
- organisational policies and procedures, including quality requirements, reporting and recording procedures, related to repairing engines and components,
- WHS regulations and requirements, equipment, and material and personal safety requirements, related to the overhaul of two and four cycle engines and components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to overhauling marine engines and components
- complete preparatory activity in a systematic manner
- overhaul a range of two and four cycle outboard engines to industry and manufacturer specifications and within workplace timeframes
- test prior to placing in service
- complete workplace records as required by the workplace.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate worksite
  - range of two and four cycle outboard engines
  - work instructions
  - equipment, hand and power tooling appropriate to repairing marine engines
  - relevant information, including manufacturer

<b>EVIDENCE GUIDE</b>	
	specifications .
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Engines</b>	<p>Engines may include:</p> <ul style="list-style-type: none"> <li>• 2-stroke spark ignition for marine craft</li> <li>• 4-stroke compression ignition engines for marine craft</li> </ul>
<b>Overhaul</b>	Overhaul may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• complete dismantling of an assembly and component parts</li> <li>• measuring and evaluation of wear</li> <li>• the replacement, repair, rebuilding or reconditioning of parts comparable to original parts</li> <li>• re-assembly procedures</li> <li>• performance of functional testing</li> <li>• completion of records</li> </ul>
<b>Pre-start checking procedures</b>	<p>Pre-start checking procedures may include:</p> <ul style="list-style-type: none"> <li>• running to operating temperature</li> <li>• priming oil</li> <li>• checking engine fluid levels, including lubrication and coolant</li> <li>• checking fuel system for leaks</li> <li>• checking for abnormal noises</li> <li>• checking for pressures</li> <li>• checking gauges and warning devices for operation</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include operational risk assessments associated with:</p> <ul style="list-style-type: none"> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Environmental work practices</b>	<p>Environmental work practices may include:</p> <ul style="list-style-type: none"> <li>• use of renewable, recyclable, reusable and recoverable resources</li> <li>• minimisation and appropriate disposal of waste and packaging</li> <li>• prevention of contaminants and wastewater entering stormwater drains, waterways or marine environments</li> <li>• minimisation and containment of hazards to air quality</li> <li>• minimisation of noise generating activities</li> <li>• safe storage of parts and components containing environmentally hazardous material</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• provision of appropriate storage or recycling containers for solid and liquid waste</li> <li>• use of impervious paved area for surface cleaning, engine degreasing and preparation</li> <li>• use of an approved parts washer</li> <li>• use of drip trays under vehicles</li> <li>• cleaning hands over drains connected to an oil/water separator or liquid waste collection drums</li> <li>• minimisation of vehicle exhausts and emissions and provision of ventilated work areas</li> <li>• use of a ventilated, enclosed booth or chamber for spray painting and abrasive sanding</li> <li>• recovering chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and blends from air conditioning systems for recycling or approved disposal</li> <li>• prevention of tributyltin, arsenic, mercury and dichlorodiphenyltrichloroethane (DDT) entering the marine environment</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Environment Protection Regulations related to diesel fuels</li> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying of engine cradles, slings and shackles and the safety ratings against the load to be lifted</li> <li>• emergency procedures</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## AURRTE5012 Analyse and evaluate light marine engine and powerhead system faults

### Modification History

Release	Comment
Release 1	Replaces AURT573793A Analyse and evaluate light marine engine and powerhead system faults Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to analyse and evaluate light marine engine and powerhead systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	<p>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</p>
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning light marine engine and powerhead systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Light marine engine and powerhead system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3.Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4.Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5.Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6.Information and detail related to the analysis and evaluation is provided to the appropriate persons in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1.Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2.A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3.Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary light marine engine and powerhead systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- light marine terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance.
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the types, functions, operations and limitations of light marine engines.
- detailed knowledge of the types, function, operations and limitations of light marine fuel systems/components.
- detailed knowledge of the types, function, operations and limitations of light marine ignition systems/components.
- detailed knowledge of the types, function, operations and limitations of light

## REQUIRED SKILLS AND KNOWLEDGE

- marine intake systems/components.
- detailed knowledge of the types, function, operations and limitations of light marine exhaust systems/components.
- detailed knowledge of the types, function, operations and limitations of light marine lubrication systems/components.
- detailed knowledge of the types, function, operations and limitations of light marine cooling systems/components.
- detailed knowledge of the types, function, operations and limitations of light marine engine mounting systems/ components.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of marine digital computing systems.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>• Interpret work order and locate and apply information.</li> <li>• Apply safety requirements, including the isolation of equipment and use of personal protective equipment.</li> <li>• Follow work instructions, operating procedures and inspection processes to:               <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality.</li> </ul> </li> <li>• Complete failure analyses on a minimum of three different light marine engine and powerhead systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.</li> <li>• Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different light marine engine and powerhead systems.</li> <li>• Document and report the diagnostic process and findings and recommended rectification for two of the above.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.</p> <p>Access to a requirement and objective(s) for analysis and evaluation, light marine engine and powerhead systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.</p>
<b>Method of assessment</b>	<p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process.</p> <p>Direct evidence may include certification of compliance of</p>

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	<p>the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Failure analysis and evaluation process**

The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.

**Engine systems**

- Engine systems are to include two-stroke, four-stroke, diesel and petrol engines.
- Engine systems to be covered in this unit are to include the engine and related fuel, ignition, intake, exhaust, lubrication and cooling systems.
- Coverage is to include direct high-pressure petrol injection two-stroke.

**Engine system failures**

- Engine system failures covered by this unit are to include engine (poor performance, excessive oil consumption, engine stoppages), fuel (contamination, flow, pressure, leakage),

<b>RANGE STATEMENT</b>	
	<p>ignition (pre-ignition, detonation, no-start, no-run, misfire, erratic operation, lack of power, charging), intake (leakage, noise, vibration, inadequate control, exhaust (pressure, abnormal emissions against current and proposed standards), lubrication (pressure, flow, leakage), abnormal engine wear, inadequate filtration, sludge formation, excessive deposits, overheating, cooling (overcooling, coolant out of specification, lack of water flow, internal corrosion), mounting (noise, vibration, harshness) engine management, engine performance (response, fuel consumption), contamination, emissions, forced induction, fuel supply/pressure, leaks, sensors, starting and damaged components.</p> <ul style="list-style-type: none"> <li>• Engine system failures covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include bore gauges, compression gauges, computer-based diagnostic system (direct and internet), cooling system

<b>RANGE STATEMENT</b>	
	analyser, dial gauges, micrometers, multimeter, oscilloscope, pressure gauges, stethoscope, telescopic gauges, temperature gauges, tachometer, timing lights, vacuum gauges, verniers, and may include anemometer, barometer, specific gravity gauge.
<b>Tests</b>	Tests to be conducted are to include component wear analysis, compression, cylinder leakage, engine performance, oil consumption, pressure, sample collection/processing, specific gravity, temperature, vacuum, ignition timing adjustments, injector pump timing.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to light marine engine systems.</li> <li>• Marine industry regulations.</li> <li>• Marine industry publications related to emerging engine system technology and technology changes.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURRTQ2001 Service inboard propeller drive systems

### Modification History

Release	Comment
Release 1	Replaces AURR213670A Service inboard propeller drive systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to carry out the service of inboard propeller drive systems and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, prepare for, service and test inboard propeller drive systems and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake servicing of drive systems installation of inboard propeller drive systems.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source service procedures and relevant workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Determine service method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.6. Set up work area
2. Service propeller drive systems and associated components	2.1. Conduct service in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Conduct pre-start checks, make required adjustments and re-test 2.3. Check that protective guards, cowlings and safety features are in place according to workplace expectations 2.4. Determine the need for water testing
3. Clean up work area and maintain equipment	3.1. Make final inspection 3.2. Clean and inspect equipment and tooling according to workplace requirements 3.3. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.4. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as required 3.5. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the servicing of inboard propeller drive systems, to perform diagnosis and repair actions, and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles of inboard propeller drive systems
- servicing procedures for inboard propeller drive systems
- measuring and testing procedures
- types of lubricants and application methods
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to servicing inboard propeller drive systems
- organisational policies and procedures, including quality, reporting and recording procedures, related to servicing inboard propeller drive systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- service a range of inboard propeller drive systems to workplace and manufacturer and component supplier requirements and within workplace timeframe
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - inboard propeller drive systems
  - equipment, hand and power tools appropriate to the servicing of inboard propeller drive systems
  - activities covering the mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment

**EVIDENCE GUIDE**

	<p>Guidelines of this Training Package.</p> <ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Marine inboard propeller drive systems**

Marine inboard propeller drive systems may include:

- sterntube
- 'A' frame strut
- 'T' strut
- cutlass bearing
- fibre bearing

<b>RANGE STATEMENT</b>	
<b>Marine engines</b>	<p>Marine engines may include:</p> <ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Servicing methods</b>	<p>Servicing methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• minor adjustments and operational testing</li> <li>• replacement of fluids and filters</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> <li>• lubricating equipment</li> <li>• measuring equipment</li> <li>• pressure gauges</li> <li>• vacuum gauges</li> <li>• manufacturer's special stools</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>persons</p> <ul style="list-style-type: none"> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard) w</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• emergency procedures</li><li>• road rules</li><li>• safe driving policy</li></ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Drivelines and Final Drives
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## AURRTQ2002 Service jet drive propulsion systems

### Modification History

Release	Comment
Release 1	Replaces AURR214170B Service jet drive propulsion systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to carry out the servicing of jet propulsion systems.</p> <p>It requires the ability to identify and confirm work requirements, prepare for and service jet propulsion systems, and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake servicing of jet propulsion systems as fitted to vessels in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Confirm nature and scope of work to be carried out</li><li>1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work</li><li>1.3. Source service procedures and relevant workshop manuals and manufacturer information</li><li>1.4. Check and prepare tools, equipment and materials</li><li>1.5. Determine service method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures</li><li>1.6. Set up work area</li></ul>
2. Service jet drive propulsion systems and associated components	<ul style="list-style-type: none"><li>2.1. Conduct service in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices</li><li>2.2. Conduct pre-start checks, make required adjustments and re-test</li><li>2.3. Check that protective guards, cowlings and safety features are in place according to workplace expectations</li><li>2.4. Determine the need for water testing</li></ul>
3. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>3.1. Clean and inspect equipment and tooling according to workplace requirements</li><li>3.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements</li><li>3.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required</li><li>3.4. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing of jet drive propulsion systems and components, and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications, and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles and construction of jet drive propulsion systems and components
- servicing procedures
- minor adjustment procedures for different system types
- types of lubricants and application methods
- measuring and testing procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to servicing of jet drive propulsion systems and components
- organisational policies and procedures, including quality, reporting and recording procedures, related to servicing of jet drive propulsion systems and components



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret the servicing data
- conduct the servicing of a minimum of three (3) jet drive propulsion systems to workplace and manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - jet drive propulsion systems
  - equipment, hand and power tools appropriate to servicing of jet drive propulsion systems
  - activities covering the mandatory task requirements
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Marine jet drive propulsion systems**

Marine jet drive propulsion systems may include:

- axial
- mixed
- geared
- variable

**Marine engines**

Marine engines may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Servicing methods</b>	<p>Servicing methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• minor adjustments and operational testing</li> <li>• replacement of fluids and filters</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> <li>• lubricating equipment</li> <li>• measuring equipment</li> <li>• pressure gauges</li> <li>• vacuum gauges</li> <li>• manufacturer's special stools</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURRTQ3003 Install inboard propeller drive systems

### Modification History

Release	Comment
Release 1	Replaces AURR313631A Install inboard propeller drive systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to install and commission inboard propeller drive systems and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, prepare for, install and test inboard propeller systems and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake the installation and commissioning of inboard propeller systems in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices, applicable to the work 1.3. Source installation procedures and relevant workshop manuals and manufacturer information 1.4. Determine installation method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.5. Set up work area
2. Install and commission propeller drive systems and associated components	2.1. Carry out propeller drive system installation in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Test propeller drive systems for correct operation, make required adjustments and re-test 2.3. Commission propeller drive system 2.4. Check that protective guards, cowlings and safety features are in place according to workplace expectations 2.5. Determine the need for water testing of vessel's propeller drive system
3. Clean up work area and maintain equipment	3.1. Make final inspection of propeller drive system 3.2. Clean and inspect equipment and tooling according to workplace requirements 3.3. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.4. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required 3.5. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the installation of inboard propeller systems, to perform diagnosis and repair actions, and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications, and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- selection and installation procedures, including component and assembly removal and placement
- operating principles of jet propulsion drive systems
- measuring and testing procedures
- types of lubricants and application methods
- commissioning procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to installing inboard propeller systems
- organisational policies and procedures, including quality, reporting and recording

**REQUIRED SKILLS AND KNOWLEDGE**

procedures, related to installing inboard propeller systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- install a minimum of three (3) inboard propeller drive systems to workplace and manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the installation of an inboard propeller drive system
  - equipment, hand and power tools appropriate to installation of propeller drive systems
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Marine inboard propeller drive systems**

Marine inboard propeller drive systems may include:

- sterntube
- 'A' frame strut
- 'T' strut
- cutlass bearing
- fibre bearing

**Marine engines**

Marine engines may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Recommissioning</b>	<p>Recommissioning may include:</p> <ul style="list-style-type: none"> <li>• engine system inspection</li> <li>• reading service data</li> <li>• compiling reports</li> <li>• testing, inspecting, adjusting, cleaning, and repairing components and systems</li> </ul>
<b>Installation</b>	<p>Installation may include:</p> <ul style="list-style-type: none"> <li>• minor adjustments, alignment and operational testing</li> <li>• functional operation, including tank</li> <li>• functional operation and testing of components, including propeller shaft, skeg, propeller and couplings</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>

**RANGE STATEMENT****Information/documents**

Information/documents may include:

- verbal, written and graphical instructions issued by authorised internal and external persons
- parts listing prices and catalogues
- inventory systems
- material safety data sheets (MSDS)
- diagrams or sketches
- engineer's design specifications and instructions
- manufacturer specifications
- industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)
- Australian standards
- workplace specifications and requirements

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- duty of care

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and

<b>RANGE STATEMENT</b>	
	substances <ul style="list-style-type: none"> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURRTQ3004 Diagnose and repair inboard propeller drive systems

### Modification History

Release	Comment
Release 1	Replaces AURR313684B Diagnose and repair inboard propeller drive systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to diagnose and repair inboard propeller drive systems and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, diagnose and repair marine inboard transmissions and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the diagnosis and repair of inboard propeller drive systems in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Confirm nature and scope of work to be carried out</li><li>1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work</li><li>1.3. Access and interpret repair method, workshop manuals and manufacturer information</li><li>1.4. Check and prepare tools, equipment and materials</li><li>1.5. Set up work area</li></ul>
2. Diagnose faults	<ul style="list-style-type: none"><li>2.1. Develop a diagnosis strategy</li><li>2.2. Undertake tests in accordance with workplace procedures and manufacturer and component supplier specifications</li><li>2.3. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance</li><li>2.4. Decide upon a plan of action to rectify faults</li><li>2.5. Document results, including evidence, relevant information and recommendations</li><li>2.6. Forward report to persons for action in accordance with workplace procedures</li><li>2.7. Finalise repair requirements</li></ul>
3. Repair inboard propeller drive systems and associated components	<ul style="list-style-type: none"><li>3.1. Perform repair and adjustment operations in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices</li><li>3.2. Test system, make required adjustments and re-test</li><li>3.3. Check that protective guards, cowlings and safety features are in place according to workplace expectations</li><li>3.4. Determine the need for water testing</li></ul>
4. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>4.1. Clean and inspect equipment and tooling according to workplace requirements</li><li>4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements</li><li>4.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required</li></ul>

ELEMENT	PERFORMANCE CRITERIA
	4.4.Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the diagnosis and repair of inboard propeller drive systems, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customer, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- diagnostic and repair procedures, including component and assembly removal and placement
- measuring and testing procedures
- construction and operation of inboard propeller drive systems
- types of lubricants and their application
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to diagnosing and repairing inboard propeller drive systems
- organisational policies and procedures, including quality, reporting and recording procedures, related to diagnosing and repairing inboard propeller drive systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret diagnosis results
- conduct repair requirements to a range of inboard propeller drive systems to manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - faulty inboard propeller drive systems
  - equipment, hand and power tools appropriate to the diagnosis and repair of inboard propeller drive systems
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Marine inboard propeller drive systems**

Marine inboard propeller drive systems may include:

- sterntube
- 'A' frame strut
- 'T' strut
- cutlass bearing
- fibre bearing

**Marine engines**

Marine engines may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Repair methods</b>	<p>Repair methods may include:</p> <ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• dismantling, inspection and evaluation</li> <li>• replacement of components parts</li> <li>• assembly</li> <li>• completion of operational tests</li> <li>• completion of records</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</p> <ul style="list-style-type: none"> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>

**RANGE STATEMENT****Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)****Unit sector**

Marine

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Driveline and Final Drives

## AURRTQ3005 Install jet drive propulsion systems

### Modification History

Release	Comment
Release 1	Replaces AURR314131B Install jet drive propulsion systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to install and commission jet drive propulsion systems and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, prepare for, install and commission inboard jet drive propulsion systems and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	This unit applies to individuals who undertake installation and commissioning of jet drive propulsion systems in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices, applicable to the work 1.3. Source installation procedures and relevant workshop manuals and manufacturer information 1.4. Determine installation method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.5. Set up work area
2. Install and commission jet drive propulsion system and associated components	2.1. Carry out jet drive propulsion system installation in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Test jet drive propulsion system for correct operation, make required adjustments and re-test 2.3. Commission jet drive propulsion system 2.4. Check that protective guards, cowlings and safety features are in place according to workplace expectations 2.5. Determine the need for water testing of vessel's jet drive propulsion system
3. Clean up work area and maintain equipment	3.1. Make final inspection of jet drive propulsion system 3.2. Clean and inspect equipment and tooling according to workplace requirements 3.3. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.4. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required 3.5. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the installation of jet drive propulsion systems, to perform diagnosis and repair actions, and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications, and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- construction and operating principles of jet propulsion drive systems
- installation procedures, including component and assembly removal and placement
- measuring and testing procedures
- types of lubricants and application methods
- commissioning procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to installing inboard propeller systems
- organisational policies and procedures, including quality, reporting and recording procedures, related to installing inboard propeller systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- install a minimum of three (3) jet drive propulsion systems to workplace and manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the installation of jet drive propulsion systems
  - equipment, hand and power tools appropriate to the installation of jet drive propulsion systems
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Marine jet drive propulsion systems**

Marine jet drive propulsion systems may include:

- axial
- mixed
- geared
- variable

**Marine engines**

Marine engines may include:

- 2-stroke petrol
- 4-stroke diesel and petrol

<b>RANGE STATEMENT</b>	
<b>Vessels</b>	Vessels may include: <ul style="list-style-type: none"><li>• single or multi-hull</li><li>• inboard or outboard drive</li></ul>
<b>Recommissioning</b>	Recommissioning may include: <ul style="list-style-type: none"><li>• engine system inspection</li><li>• reading service data</li><li>• compiling reports</li><li>• testing, inspecting, adjusting, cleaning, and repairing components and systems</li></ul>
<b>Installation</b>	Installation may include: <ul style="list-style-type: none"><li>• minor adjustments, alignment and operational testing</li><li>• functional operation</li><li>• functional operation and testing of components</li></ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• hand tools</li><li>• testing equipment, including multimeters</li><li>• power tools</li><li>• air tools</li><li>• specialist tools and equipment</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• spare parts</li><li>• lubricants</li><li>• fluids</li><li>• cleaning materials</li></ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"><li>• operational risk assessment and treatments</li><li>• toxic substances</li><li>• electrical safety</li><li>• machinery movement and operation</li><li>• manual and mechanical lifting and shifting</li><li>• working in proximity to others</li></ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"><li>• verbal, written and graphical instructions issued by authorised internal and external</li></ul>

**RANGE STATEMENT**

	<p>persons</p> <ul style="list-style-type: none"> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURRTQ3006 Diagnose and repair jet drive propulsion systems

### Modification History

Release	Comment
Release 1	Replaces AURR314166B Diagnose and repair jet drive propulsion systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to diagnose and repair jet drive propulsion systems and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, diagnose and repair marine inboard transmissions and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the diagnosis and repair of jet drive propulsion systems in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Diagnose faults	2.1. Develop a diagnosis strategy 2.2. Undertake system tests in accordance with workplace procedures and manufacturer and component supplier specifications 2.3. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance 2.4. Decide upon a plan of action to rectify faults 2.5. Document results, including evidence, relevant information and recommendations 2.6. Forward report to persons for action in accordance with workplace procedures 2.7. Finalise repair requirements
3. Repair jet drive propulsion systems and associated components	3.1. Perform repair and adjustment operations in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 3.2. Test systems, make required adjustments and re-test 3.3. Check that protective guards, cowlings and safety features are in place according to workplace expectations 3.4. Determine the need for water testing
4. Clean up work area and finalise work	4.1. Clean and inspect equipment and tooling according to workplace requirements 4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 4.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required

ELEMENT	PERFORMANCE CRITERIA
	4.4.Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the diagnosis and repair of jet propulsion systems, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- diagnostic and repair procedures, including component and assembly removal and placement
- measuring and testing procedures
- construction and operation of jet propulsion drive systems
- types of lubricants and their application
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to diagnosing and repairing jet propulsion drive systems
- organisational policies and procedures, including quality, reporting and recording procedures, related to diagnosing and repairing inboard propeller drive systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of jet drive propulsion systems to manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - faulty jet drive propulsion systems
  - equipment, hand and power tools appropriate to the diagnosis and repair of jet drive propulsion systems
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required

**EVIDENCE GUIDE**

	<p>Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Marine jet drive propulsion systems</b>	<p>Marine jet drive propulsion systems may include:</p> <ul style="list-style-type: none"> <li>• axial</li> <li>• mixed</li> <li>• geared</li> <li>• variable</li> </ul>
<b>Marine engines</b>	<p>Marine engines may include:</p> <ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Repair methods</b>	Repair methods may include: <ul style="list-style-type: none"><li>• isolation of faults</li><li>• dismantling, inspection and evaluation</li><li>• replacement of components parts</li><li>• assembly</li><li>• completion of operational tests</li><li>• completion of records</li></ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• hand tools</li><li>• testing equipment, including multimeters</li><li>• power tools</li><li>• air tools</li><li>• specialist tools and equipment</li></ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"><li>• operational risk assessment and treatments</li><li>• toxic substances</li><li>• electrical safety</li><li>• machinery movement and operation</li><li>• manual and mechanical lifting and shifting</li><li>• working in proximity to others</li></ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"><li>• verbal, written and graphical instructions issued by authorised internal and external persons</li><li>• parts listing prices and catalogues</li><li>• inventory systems</li><li>• material safety data sheets (MSDS)</li><li>• diagrams or sketches</li><li>• engineer's design specifications and instructions</li><li>• manufacturer specifications</li><li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li><li>• Australian standards</li><li>• workplace specifications and requirements</li></ul>
<b>Legislative requirements</b>	Legislative requirements are to be in accordance

<b>RANGE STATEMENT</b>	
	<p>with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"><li>• award and enterprise agreements</li><li>• industrial relations</li><li>• Australian standards</li><li>• Australian Design Rules</li><li>• confidentiality and privacy</li><li>• WHS</li><li>• the environment</li><li>• equal opportunity</li><li>• anti-discrimination</li><li>• duty of care</li></ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"><li>• personal protective equipment and clothing</li><li>• safety equipment</li><li>• first aid equipment</li><li>• hazard and risk control</li><li>• elimination of hazardous materials and substances</li><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li><li>• road rules</li><li>• safe driving policy</li></ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li></ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURRTR1001 Inspect, service and maintain marine battery storage systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes to inspect service and maintain battery storage systems in recreational boating equipment and marine applications.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to marine applications ranging from personal leisure craft to light commercial applications for inboard, stern drive and outboard marine applications.</p> <p>Work requires individuals to demonstrate limited judgement and problem-solving skills in managing own work activities.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake inspection	<ul style="list-style-type: none"><li>1.1. Nature and scope of work requirements are identified and confirmed</li><li>1.2. <b>Workplace Health and Safety (WHS) requirements</b> and other appropriate precautions are identified and taken</li><li>1.3. Technical inspection requirements are sourced</li><li>1.4. Tools and equipment are located and prepared</li><li>1.5. <b>Safe operating procedures</b> for working with batteries are identified and confirmed</li></ul>
2. Conduct inspection	<ul style="list-style-type: none"><li>2.1. Inspection methods are implemented according to workplace procedures</li><li>2.2. Inspection results are compared with job requirements</li><li>2.3. Results are documented with evidence and supporting information and recommendations made</li><li>2.4. Inspection report is forwarded to persons for action according to workplace procedures</li></ul>
3. Carry out service and maintenance	<ul style="list-style-type: none"><li>3.1. <b>Service and/or maintenance methods</b> are carried out according to workplace procedures and job requirements</li><li>3.2. Adjustments made during service and/or maintenance are carried out according to workplace requirements and job requirements</li><li>3.3. Unserviceable components are removed and tagged and faults are identified according to work requirements</li></ul>
4. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>4.1. Work area is tidied, and tools and equipment are replaced according to workplace requirements</li><li>4.2. Workplace documentation is completed according to workplace requirements</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - communicate information relating to work requirements and battery safety
- literacy skills to:
- read and follow battery inspection and maintenance information
  - read and follow information on standard operating procedures and job requirements
  - numeracy skills to interpret instruments, gauges and measuring equipment
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities which implement and follow standard workplace procedures
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - locate and identify appropriate tools and equipment
  - locate technical information
  - recognise limitations and seek timely advice
- technical skills to:
  - select tools and equipment appropriate to the inspection, service and maintenance of marine batteries
  - use battery servicing and testing tools and equipment correctly
- technology skills to:
  - use workplace technology to assist with work practices
  - use workplace technology to access and transfer information including the reporting/documenting of results

#### Required knowledge

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- battery inspection and maintenance procedures
- dangers of working with batteries and battery testing equipment
- operating principles and layout of marine battery storage systems
- work organisation and planning processes
- workplace documentation procedures



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe workplace safety procedures and battery safety requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- inspect, service and maintain battery storage systems in marine applications according to workplace, manufacturer and component supplier requirements
- complete workplace documents.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice

The following resources should be made available:

- workplace location or simulated workplace environment that reflects a marine maintenance facility or environment
- material relevant to inspection, servicing and maintenance of battery storage systems for marine or pleasure craft
- tools and equipment appropriate for the inspection and servicing and maintenance of battery storage systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Safe operating procedures may include:***

- the conduct of operational risk assessment
- toxic substances awareness
- electrical safety
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors.

***Service and/or maintenance methods may include:***

- inspection of battery and leads
- inspection of battery securing system
- battery removal
- battery and battery compartment cleaning
- battery fluid top-up
- hydrometer testing
- battery charging.

## Unit Sector(s)

<b>Competency field</b>	Marine
<b>Unit sector</b>	Technical – Electrical and electronic

## Custom Content Section

Not applicable.

## AURRTR3002 Install marine electronic systems and components

### Modification History

Release	Comment
Release 1	Replaces AURE321831B Install marine electronic systems and components  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to carry out the installation of marine low voltage electronic systems and components, including global positioning systems (GPS), depth sounders, fish finders, communications equipment and radar.</p> <p>It requires the ability to identify and confirm work requirements, prepare for, install and test marine low voltage electronic systems and components and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	This unit applies to individuals who undertake the installation of marine low voltage electronic systems and components in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Confirm nature and scope of work to be carried out</li><li>1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work</li><li>1.3. Source installation procedures and relevant workshop manuals and manufacturer information</li><li>1.4. Determine installation method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures</li><li>1.5. Set up work area</li></ul>
2. Install marine electronic systems and components	<ul style="list-style-type: none"><li>2.1. Carry out marine electronic systems and components installation in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices</li><li>2.2. Conduct pre-start checks, make required adjustments and re-test</li><li>2.3. Determine the need for water testing</li></ul>
3. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>3.1. Make final inspection of electronic systems</li><li>3.2. Clean and inspect equipment and tooling according to workplace requirements</li><li>3.3. Tag unserviceable equipment and faults identified in accordance with workplace requirements</li><li>3.4. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as required</li><li>3.5. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the installation and testing of marine electronic systems and components, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and electrical circuit and component installation procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customer, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, procedures for circuit and component testing, major repairs, installation and component replacement, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements to determine electrical circuit and component installation requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- the principles of electronics
- the principles of interference suppression
- procedures for the installation of marine electronic systems and components
- wiring diagram interpretation
- measuring and testing procedures
- manufacturer and component supplier specifications and procedures, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to installing marine electronic systems
- organisational policies and procedures, including quality, reporting and recording procedures, related to installing marine electronic systems



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- install a range a range of electronic systems and components to workplace and manufacturer and component supplier requirements, including GPS, depth sounders, fish finders, communications equipment, audiovisual equipment and radar
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - marine electronic systems and components
  - equipment, hand and power tooling appropriate to the installation of marine electronic systems and

<b>EVIDENCE GUIDE</b>	
	components <ul style="list-style-type: none"> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Electronic systems and components</b>	Electronic systems and components may include: <ul style="list-style-type: none"> <li>• GPS</li> <li>• depth sounders</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• fish finders</li> <li>• communications equipment and radar</li> <li>• audiovisual equipment</li> </ul>
<b>Repair and test</b>	<p>Repair and rebuild may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• dismantling and reassembly</li> <li>• repair and replacement of components</li> <li>• testing and adjustments</li> </ul>
<b>Low voltage marine electronic systems and components</b>	<p>Low voltage marine electronic systems and components may include:</p> <ul style="list-style-type: none"> <li>• GPS</li> <li>• depth sounders</li> <li>• communications equipment</li> <li>• radar</li> <li>• inverters</li> <li>• alarm systems</li> <li>• digital antenna systems</li> <li>• television</li> <li>• remote phone antenna</li> <li>• coaxial cable appliances</li> </ul>
<b>Final inspection procedures</b>	<p>Final inspection procedures may include:</p> <ul style="list-style-type: none"> <li>• checking operation of electronic system or component</li> <li>• checking that covers are in place on equipment</li> <li>• cabling and wiring is securely fastened</li> <li>• transducers, antennas and receivers are positioned correctly</li> </ul>
<b>Installation methods</b>	<p>Installation methods may include:</p> <ul style="list-style-type: none"> <li>• reading and interpreting wiring diagrams</li> <li>• wiring, soldering and crimping</li> <li>• installing components and wiring</li> <li>• adjustments and post-installation checks</li> <li>• functional operation testing</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specific service and general workshop equipment and tooling</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• measuring equipment</li> <li>• termination equipment</li> <li>• analogue and digital meters</li> <li>• crimping tools</li> <li>• soldering equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• Repair Times manuals</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry codes of practice</li> <li>• workplace specifications and requirements</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"><li>• Australian Design Rules</li><li>• confidentiality and privacy</li><li>• WHS</li><li>• the environment</li><li>• equal opportunity</li><li>• anti-discrimination</li><li>• duty of care</li></ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"><li>• personal protective equipment and clothing</li><li>• safety equipment</li><li>• first aid equipment</li><li>• hazard and risk control</li><li>• elimination of hazardous materials and substances</li><li>• manual handling, including shifting, lifting and carrying</li><li>• emergency procedures</li></ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Electrical and Electronic
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## AURRTR3003 Test, diagnose and repair marine electronic systems and components

### Modification History

Release	Comment
Release 1	Replaces AURE321832A Test, diagnose and repair marine electronic systems and components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to diagnose and repair marine electronic systems and components.</p> <p>It requires the ability to identify and confirm work requirements, prepare for, test, diagnose and repair marine low voltage electronic systems and components and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the repair of electronic systems and components in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for systems and component repair work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Access and interpret test and repair methods, workshop manuals and manufacturer information 1.4. Check and prepare tools, measuring equipment and materials 1.5. Set up work area
2. Conduct system tests and analyse results	2.1. Develop a diagnosis strategy 2.2. Undertake system tests in accordance with workplace procedures and manufacturer and component supplier specifications 2.3. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance 2.4. Document results, including evidence, relevant information and recommendations 2.5. Forward report to persons for action in accordance with workplace procedures 2.6. Finalise repair requirements
3. Dismantle systems and components	3.1. Dismantle electronic system and components in a logical sequence without causing damage 3.2. Clean and arrange components ready for inspection and testing 3.3. Measure and compare components against supplier specifications and tolerances 3.4. Decide repair method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 3.5. Source parts, as required 3.6. Determine and arrange outsourcing of third-party repair
4. Repair, reassemble and reconnect systems and components	4.1. Perform repair and rebuild operations in accordance with workplace procedures and manufacturer and component supplier specifications and tolerances 4.2. Re-assemble electronic systems and components following manufacturer and component supplier procedures to industry standards

ELEMENT	PERFORMANCE CRITERIA
	<p>4.3. Test systems for correct and safe operation and make required adjustments and re-test</p> <p>4.4. Complete workplace documentation and deal with as relevant to repair outcomes</p>
<p>5. Prepare for delivery to customer</p>	<p>5.1. Determine the need for water testing</p> <p>5.2. Make final inspection to ensure protective features are in place and according to workplace requirements</p> <p>5.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required</p> <p>5.4. Clean work area, dispose of waste and store tools and equipment in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the repair and testing of marine electronic systems and components, including use of specialist tooling, measuring equipment, use of communication devices and workplace technology, to record results of repair work
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures and sufficient to interpret technical information and specifications and to prepare reports
- numeracy skills to the level required to correctly calculate time, assess meter readings, apply accurate measurements, calculate electrical requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles, construction and types of marine related electronic systems and components
- test and repair procedures and methodologies for different electronic systems and components
- testing and adjustment procedures for different electronic systems and components types
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to repairing and testing electronic systems and components

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>organisational policies and procedures, including quality requirements, reporting and recording procedures related to repairing and testing electronic systems and components, WHS regulations and requirements, equipment, material and personal safety requirements</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select repair methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- repair and test a range of electronic systems and components to workplace and manufacturer and component supplier requirements, including GPS, depth sounders, fish finders, communications equipment, audiovisual equipment and radar
- complete repair of electronic systems and components within workplace timeframes
- complete workplace records.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate worksite
  - a range of electronic systems and components
  - specifications and work instructions
  - equipment, hand and power tooling appropriate to repairing marine engines
  - relevant information, including manufacturer

<b>EVIDENCE GUIDE</b>	
	specifications.
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Electronic systems and components</b>	<p>Electronic systems and components may include:</p> <ul style="list-style-type: none"> <li>global positioning systems (GPS)</li> <li>depth sounders</li> <li>fish finders</li> <li>communications equipment and radar</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• audiovisual equipment</li> </ul>
<b>Repair and test</b>	<p>Repair and test may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• dismantling and reassembly</li> <li>• repair and replacement of components</li> <li>• testing and adjustments</li> </ul>
<b>Final inspection procedures</b>	<p>Final inspection procedures may include:</p> <ul style="list-style-type: none"> <li>• checking operation of electronic system or component</li> <li>• checking that covers are in place on equipment</li> <li>• cabling and wiring is securely fastened</li> <li>• transducers, antennas and receivers are positioned correctly</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• specific service and general workshop equipment and tooling</li> <li>• measuring equipment</li> <li>• termination equipment</li> <li>• analogue and digital meters</li> <li>• crimping tools</li> <li>• soldering equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• cable</li> <li>• terminations</li> <li>• cleaning materials</li> </ul>
<b>Environmental work practices</b>	<p>Environmental work practices may include:</p> <ul style="list-style-type: none"> <li>• use of renewable, recyclable, reusable and recoverable resources</li> <li>• minimisation and appropriate disposal of waste and packaging</li> <li>• prevention of contaminants and wastewater entering stormwater drains, waterways or marine environments</li> <li>• minimisation and containment of hazards to air quality</li> <li>• minimisation of noise generating activities</li> <li>• safe storage of parts and components</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>containing environmentally hazardous material</p> <ul style="list-style-type: none"> <li>• provision of appropriate storage or recycling containers for solid and liquid waste</li> <li>• use of impervious paved area for surface cleaning, engine degreasing and preparation</li> <li>• use of an approved parts washer</li> <li>• cleaning hands over drains connected to an oil/water separator or liquid waste collection drums</li> <li>• minimisation of exhausts and emissions and provision of ventilated work areas</li> <li>• use of a ventilated, enclosed booth or chamber for spray painting and abrasive sanding</li> <li>• recovering CFCs, HCFCs and blends from air conditioning systems for recycling or approved disposal</li> <li>• prevention of tributyltin, arsenic, mercury and DDT entering the marine environment</li> </ul>
<b>Information and documents</b>	<p>Information and documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• Repair Times manuals</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry codes of practice</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

Unit sector	Marine
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Electrical and Electronic
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## AURRTR3004 Install marine electrical systems and components

### Modification History

Release	Comment
Release 1	Replaces AURE320031B Install marine electrical systems and components  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to carry out installation of marine low voltage electrical systems and components, including dash instrumentation, switch and fuse panels, bilge pumps, lighting and navigation aids.</p> <p>It requires the ability to identify and confirm work requirements, prepare for, install and test marine electrical systems and components, and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	This unit applies to individuals who undertake installation of marine electrical systems and components in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Confirm nature and scope of work to be carried out</li><li>1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work</li><li>1.3. Source installation procedures and relevant workshop manuals and manufacturer's information</li><li>1.4. Determine installation method in accordance with WHS, environmental and industry regulations and guidelines and enterprise procedures</li><li>1.5. Set up work area</li></ul>
2. Install marine electrical systems and components	<ul style="list-style-type: none"><li>2.1. Install and wire marine electrical systems and components in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices</li><li>2.2. Conduct pre-start check, make required adjustments and re-test</li><li>2.3. Determine the need for water testing</li></ul>
3. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>3.1. Make final inspection of electrical systems</li><li>3.2. Clean and inspect equipment and tooling according to workplace requirements</li><li>3.3. Tag unserviceable equipment and faults identified in accordance with workplace requirements</li><li>3.4. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required</li><li>3.5. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the installation and testing of marine electrical systems and components, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and electrical circuit and component installation procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, procedures for circuit and component testing, major repairs, installation and component replacement, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements to determine electrical circuit and component installation requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- the principles of electricity
- types of installation materials and their application
- electrical connection, crimping and soldering techniques
- installation and testing procedures for marine electrical systems and components
- measuring and testing procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to installing marine electrical systems
- organisational policies and procedures, including quality, reporting and recording

**REQUIRED SKILLS AND KNOWLEDGE**

procedures, related to installing marine electrical systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- perform electrical connections, including crimping and soldering
- install a range of marine electrical systems and components to manufacturer and component supplier requirements, including dash instrumentation, switch and fuse panels, bilge pumps, and lighting and navigation aids within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - marine electrical systems and components
  - equipment, hand and power tooling appropriate to

<b>EVIDENCE GUIDE</b>	
	<p>the installation of marine electrical systems and components</p> <ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Marine electrical systems</b>	<p>Marine electrical systems may include low voltage:</p> <ul style="list-style-type: none"> <li>• switch and fuse panels</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• bilge water, grey water, black water and freshwater pumps</li> <li>• pump control systems (e.g. float switches)</li> <li>• battery motorised ventilation</li> <li>• solar systems</li> <li>• carbon monoxide gas alarm systems</li> <li>• low voltage charging stations</li> <li>• lighting (e.g. incandescent, fluorescent and LED)</li> </ul>
<b>Marine engines</b>	<p>Marine engines may include:</p> <ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Installation methods</b>	<p>Installation methods may include:</p> <ul style="list-style-type: none"> <li>• reading and interpreting wiring diagrams</li> <li>• soldering and crimping</li> <li>• installing components and wiring</li> <li>• adjustments and post-installation checks</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• Repair Times manuals</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current driver's licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting</li> </ul>

<b>RANGE STATEMENT</b>	
	and carrying <ul style="list-style-type: none"> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Engines
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## AURRTX2001 Service marine outboard and stern drive transmissions

### Modification History

Release	Comment
Release 1	Replaces AURR207670B Service marine outboard and stern drive transmissions Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to carry out the servicing of outboard and stern drive transmissions and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, service marine outboard and stern drive transmissions and to complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake servicing of outboard and stern drive transmissions in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source service procedures and relevant workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Determine service method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.6. Set up work area
2. Service outboard and stern drive transmissions and associated components	2.1. Conduct service in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Conduct pre-start checks, make required adjustments and re-test 2.3. Check that protective guards, cowlings and safety features are in place according to workplace expectations 2.4. Determine the need for water testing
3. Clean up work area and finalise work	3.1. Make final inspection 3.2. Clean and inspect equipment and tooling according to workplace requirements 3.3. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.4. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as required 3.5. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing of outboard and stern drive marine transmissions and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications, and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles of outboard and stern drive marine transmissions
- servicing procedures
- minor adjustment procedures for different engines types
- types of lubricants and application methods
- measuring and testing procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environments, relevant to servicing outboard and stern drive marine transmissions
- organisational policies and procedures, including quality, reporting and recording procedures, related to servicing outboard and stern drive marine transmissions



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct the servicing of a minimum of two (2) outboard and two (2) stern drive transmissions to workplace and manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - marine outboard and stern drive transmissions
  - equipment, hand and power tools appropriate to the servicing of marine transmissions
  - activities covering the mandatory task requirements
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Outboard and stern drive marine transmissions**

Outboard and stern drive marine transmissions may include:

- cone clutch
- mechanical dog clutch

**Marine engines**

Marine engines may include:

- 2-stroke petrol

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Servicing methods</b>	<p>Servicing methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• minor adjustments and operational testing</li> <li>• replacement of fluids and filters</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> <li>• lubricating equipment</li> <li>• measuring equipment</li> <li>• pressure gauges</li> <li>• vacuum gauges</li> <li>• manufacturer's special stools</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• inventory systems</li> <li>• Repair Times manuals</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry codes of practice</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• workplace specifications and requirements</li> <li>• Australian standards</li> <li>• current driver's licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>and carrying</li><li>• emergency procedures</li><li>• road rules</li><li>• safe driving policy</li></ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"><li>• waste management</li><li>• noise</li><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Transmission
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## AURRTX2002 Service marine inboard transmissions

### Modification History

Release	Comment
Release 1	Replaces AURR207770B Service marine inboard transmissions Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to carry out the service of marine inboard transmissions and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, prepare for and service marine inboard transmissions and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	This unit applies to individuals who undertake servicing of inboard transmissions in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source service procedures and relevant workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Determine service method in accordance with WHS, environmental and industry regulations, and guidelines and enterprise procedures 1.6. Set up work area
2. Service marine inboard transmissions and associated components	2.1. Conduct service in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 2.2. Conduct pre-start checks, make required adjustments and re-test 2.3. Check that protective guards, cowlings and safety features are in place according to workplace expectations 2.4. Determine the need for water testing
3. Clean up work area and maintain equipment	3.1. Clean and inspect equipment and tooling according to workplace requirements 3.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required 3.4. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to servicing of marine inboard transmissions and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- operating principles and construction of inboard marine transmissions
- servicing procedures
- minor adjustment procedures for different engines types
- types of lubricants and application methods
- measuring and testing procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to servicing marine inboard transmissions
- organisational policies and procedures, including quality, reporting and recording procedures, related to servicing marine inboard transmissions



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct the servicing requirements on a minimum of one (1) velvet drive and one (1) 'V' drive inboard transmission to workplace and manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - marine inboard transmissions
  - equipment, hand and power tools appropriate to the servicing of marine inboard transmissions
  - activities covering the mandatory task requirements
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Inboard marine transmissions**

Inboard marine transmissions may include:

- 'V' drive transmissions
- step up transmissions
- hydraulic transmissions
- mechanical transmissions
- counter shaft transmissions

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• planetary gear transmissions</li> <li>• mechanical dog clutch</li> </ul>
<b>Marine engines</b>	<p>Marine engines may include:</p> <ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Servicing methods</b>	<p>Servicing methods may include:</p> <ul style="list-style-type: none"> <li>• on- and off-site repairs</li> <li>• minor adjustments and operational testing</li> <li>• replacement of fluids and filters</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> <li>• lubricating equipment</li> <li>• measuring equipment</li> <li>• pressure gauges</li> <li>• vacuum gauges</li> <li>• manufacturer's special stools</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>

**RANGE STATEMENT****Information/documents**

Information/documents may include:

- verbal, written and graphical instructions issued by authorised internal and external persons
- parts listing prices and catalogues
- inventory systems
- material safety data sheets (MSDS)
- diagrams or sketches
- engineer's design specifications and instructions
- manufacturer specifications
- industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)
- Australian standards
- workplace specifications and requirements

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- duty of care

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and

<b>RANGE STATEMENT</b>	
	substances <ul style="list-style-type: none"> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Transmission
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## AURRTX3003 Diagnose and repair marine outboard and stern drive transmissions

### Modification History

Release	Comment
Release 1	<p>Replaces AURR307684B Diagnose and repair marine outboard and stern drive transmissions</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to diagnose and repair marine outboard and stern drive transmissions and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, diagnose and repair marine outboard and stern drive transmissions and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake diagnosis and repair of marine outboard and stern drive transmissions in a marine environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices, applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Diagnose faults	2.1. Develop a diagnosis strategy 2.2. Undertake transmission tests in accordance with workplace procedures and manufacturer and component supplier specifications 2.3. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance 2.4. Decide upon a plan of action to rectify faults 2.5. Document results, including evidence, relevant information and recommendations 2.6. Forward report to persons for action in accordance with workplace procedures 2.7. Finalise repair requirements
3. Repair outboard and stern drive transmissions and associated components	3.1. Perform repair and adjustment operations in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 3.2. Test transmission, make required adjustments and re-test 3.3. Check that protective guards, cowlings and safety features are in place according to workplace expectations 3.4. Determine the need for water testing
4. Clean up work area and finalise work	4.1. Clean and inspect equipment and tooling according to workplace requirements 4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 4.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as

ELEMENT	PERFORMANCE CRITERIA
	<p>required</p> <p>4.4.Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the diagnosis and repair of marine outboard and stern drive transmissions, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- diagnostic and repair procedures, including component and assembly removal and placement
- measuring and testing procedures
- construction and operation of marine outboard and stern drive transmissions
- types of lubricants and their application
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to diagnosing and repairing marine outboard and stern drive transmissions
- organisational policies and procedures, including quality, reporting and recording procedures, related to diagnosing and repairing marine outboard and stern drive

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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transmissions
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret the diagnosis results
- diagnose and repair a minimum of two (2) outboard and two (2) stern drive transmissions to manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - faulty marine outboard and/or stern drive transmissions
  - equipment, and hand and power tools appropriate to the diagnosis and repair of marine outboard and stern drive transmissions

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Outboard and stern drive marine transmissions</b>	<p>Outboard and stern drive marine transmissions may include:</p> <ul style="list-style-type: none"> <li>• cone clutch</li> <li>• mechanical dog clutch</li> </ul>
<b>Marine engines</b>	Marine engines may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	Vessels may include: <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Repair methods</b>	Repair methods may include: <ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• dismantling, inspection and evaluation</li> <li>• replacement of components parts</li> <li>• assembly</li> <li>• completion of operational tests</li> <li>• completion of records</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	Information/documents may include: <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and instructions</li> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</p> <ul style="list-style-type: none"> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> <li>• current driver's licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	<p>Organisational policies and procedures may include:</p> <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Transmission
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## AURRTX3004 Diagnose and repair marine inboard transmissions

### Modification History

Release	Comment
Release 1	Replaces AURR307784B Diagnose and repair marine inboard transmissions  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to diagnose and repair inboard transmissions and associated components on vessels.</p> <p>It requires the ability to identify and confirm work requirements, diagnose and repair marine inboard transmissions and complete work finalisation processes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	This unit applies to individuals who undertake the diagnosis and repair of inboard transmissions in a marine environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Access and interpret repair method, workshop manuals and manufacturer information 1.4. Check and prepare tools, equipment and materials 1.5. Set up work area
2. Diagnose faults	2.1. Develop a diagnosis strategy 2.2. Undertake transmission tests in accordance with workplace procedures and manufacturer and component supplier specifications 2.3. Compare test results with manufacturer and component supplier specifications to identify compliance or non-compliance 2.4. Decide upon a plan of action to rectify faults 2.5. Document results, including evidence, relevant information and recommendations 2.6. Forward report to persons for action in accordance with workplace procedures 2.7. Finalise repair requirements
3. Repair marine inboard transmissions and associated components	3.1. Perform repair and adjustment operations in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices 3.2. Test transmission, make required adjustments and re-test 3.3. Check that protective guards, cowlings and safety features are in place according to workplace expectations 3.4. Determine the need for water testing
4. Clean up work area and finalise work	4.1. Clean and inspect equipment and tooling according to workplace requirements 4.2. Tag unserviceable equipment and faults identified in accordance with workplace requirements 4.3. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as

ELEMENT	PERFORMANCE CRITERIA
	<p>required</p> <p>4.4.Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the diagnosis and repair of marine inboard transmissions, to use specialist tooling and equipment and computerised measuring equipment, and to report and record actions
- communication skills to the level required to confirm work requirements and diagnosis and repair procedures and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to research, analyse and interpret information related to work orders and manufacturer and component supplier requirements, and to record servicing details
- numeracy skills to the level required to correctly complete tests and measurements, including assessing tolerances, applying accurate measurements and calculating material requirements
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- diagnostic and repair procedures, including component and assembly removal and placement
- measuring and testing procedures
- construction and operation of marine inboard transmissions
- types of lubricants and their application
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to diagnosing and repairing marine outboard and stern drive transmissions
- organisational policies and procedures, including quality, reporting and recording procedures, related to diagnosing and repairing marine outboard and stern drive

**REQUIRED SKILLS AND KNOWLEDGE**

transmissions

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret diagnosis results
- conduct repair requirements to a range of transmission drive systems to manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - workplace location or simulated workplace
  - faulty marine inboard transmissions
  - equipment, hand and power tools appropriate to the diagnosis of faults and the repair of marine inboard transmissions
  - activities covering the mandatory task requirements
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Repair methods**

Repair methods may include:

- isolation of faults
- dismantling, inspection and evaluation
- replacement of components parts
- assembly
- completion of operational tests

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• completion of records</li> </ul>
<b>Inboard marine transmissions</b>	<p>Inboard marine transmissions may include:</p> <ul style="list-style-type: none"> <li>• 'V' drive transmissions</li> <li>• step up transmissions</li> <li>• hydraulic transmissions</li> <li>• mechanical transmissions</li> <li>• counter shaft transmissions</li> <li>• planetary gear transmissions</li> <li>• mechanical dog clutch</li> </ul>
<b>Marine engines</b>	<p>Marine engines may include:</p> <ul style="list-style-type: none"> <li>• 2-stroke petrol</li> <li>• 4-stroke diesel and petrol</li> </ul>
<b>Vessels</b>	<p>Vessels may include:</p> <ul style="list-style-type: none"> <li>• single or multi-hull</li> <li>• inboard or outboard drive</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> </ul>
<b>Safe operating procedures</b>	<p>Safe operating procedures may include:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions issued by authorised internal and external persons</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• engineer's design specifications and</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>instructions</p> <ul style="list-style-type: none"> <li>• manufacturer specifications</li> <li>• industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)</li> <li>• Australian standards</li> <li>• workplace specifications and requirements</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• dust</li><li>• clean-up management</li></ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Marine
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Transmission
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## AURRTX5005 Analyse and evaluate light marine transmission system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT573693A Analyse and evaluate light marine transmission system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to analyse and evaluate light marine transmission systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>The unit relates to an automotive technologist or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning light marine transmission systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. Analytical and evaluative methodology, including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tooling and materials required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Light marine transmission system components are prepared for the diagnostic process, including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>manufacturer/component supplier specifications.</p> <p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Materials that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary light marine transmission systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices.

#### Required knowledge

- light marine transmission terminology and definitions.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- mechanical theory covering the concepts and principles of bearings, gears and shafts.
- basic electrical theory covering voltage, current, resistance, power, magnetism and inductance.
- detailed knowledge of the function, operation, settings and adjustment of stern drives, inboard shaft and 'V' drives, outboards, jet drives, cooling systems, drivelines, shift controls and propellers.
- detailed knowledge of engine and shaft alignment for inboard and stern drive installations.
- detailed knowledge of propeller theory.
- general knowledge of marine digital computing system.

**REQUIRED SKILLS AND KNOWLEDGE**

- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
    - minimise the risk of injury to self and others
    - prevent damage and wastage of goods, equipment and products
    - maintain required production output and product quality.
  - Complete failure analyses on a minimum of three different light marine transmission systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure.
  - Analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different light marine transmission systems.
  - Document and report the diagnostic process and findings and recommended rectification for the above.
  - Work effectively with others.
  - Modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to a requirement and objective(s) for analysis and evaluation, light marine transmission systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objective(s), research facilities and technical information and a work environment.

#### Method of assessment

Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process.

**EVIDENCE GUIDE**

	<p>Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Failure analysis and evaluation process</b>	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
<b>Failure analysis</b>	Failure analysis is to include component failure, cooling, hydraulic pressures, driveline vibration, driveline sealing, shift control, and propeller selection and failure.
<b>Marine transmission systems</b>	Light marine transmission systems to be covered in this unit are to include stern drive, inboard shaft and 'V' drive, outboard, counter rotating outboard propellers and jet drive.
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, industry regulations, safety management systems,</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>hazardous substances and dangerous goods code and safe operating procedures.</p> <ul style="list-style-type: none"> <li>• Work is carried out in accordance with legislative obligations, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include dial indicator, gearbox pressure and vacuum tester, multimeter, computerised diagnostic system, cover nut tool, drive shaft spline tool, slide hammer, pinion height gauge, pressure gauge, temperature gauge, torque wrench and shaft alignment tool.
<b>Tests</b>	Tests to be conducted are to include shaft run out, pinion depth, gear backlash, component wear analysis, pressure and vacuum tests, tooth contact markings, propeller shaft end float, engine alignment, shift adjustment, shift interrupt adjustment.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and Procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to light marine transmission system.</li><li>• Marine industry regulations.</li><li>• Marine industry publications related to emerging light marine transmission system technology and technology changes.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Marine
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURSAA2001 Process customer complaints

### Modification History

Release	Comment
Release 1	Replaces AURS252290A Process customer complaints Unit code updated to meet policy requirements Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the competence to deal with customer complaints in a manner satisfying the customer but complies with enterprise policies and procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	Every action or output has a customer and therefore customers may be internal work colleagues or external to the enterprise.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Clarify the nature of complaint	1.1.Details of the complaint are established 1.2.Summary of the complaint is documented accurately 1.3.Any inconvenience to the customer is acknowledged and an apology is made
2. Identify options for complaint resolution	2.1.Options for resolving the complaint are identified 2.2.Complaint is referred to designated officer if resolution is not possible
3. Act to resolve complaint	3.1.Optimal solution is negotiated with customer 3.2.Chosen solution is implemented within agreed timeframe 3.3.Necessary documentation is finalised 3.4.Effectiveness of solution and related outcomes is evaluated 3.5.Any necessary changes to enterprise procedures are identified and passed on to appropriate persons for action

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to:
- technical literacy and interpretive skills to interpret and discern facts related to the customer complaint
- basic research and analytical skills to investigate and identify factors which caused/contributed to the complaint
- communicate ideas and information
- plain English literacy and communication skills in relation to dealing with customers and their complaints
- questioning and active listening skills, for example when obtaining factual information from excitable customers
- plan and organise activities to plan an approach to identify and resolve a complaint
- work with others and in a team by involving a designated officer if solution is not possible
- use mathematical ideas and techniques when options/solutions are costed
- establish diagnostic processes including basic conflict resolution skills for handling difficult or abusive customers, and greeting/farewelling techniques
- use workplace technology related to use of business technology to make changes to enterprise procedures

#### Required knowledge

- general knowledge of range of enterprise merchandise and services, location of departments/sections and telephone extensions of departments/sections
- general operational knowledge of industry/workplace codes of practice in relation to customer service
- basic working knowledge of legislation and statutory requirements, including consumer law, trade practices and fair trading legislation
- working knowledge of enterprise policies and procedures in regard to:
  - customer service
  - dealing with difficult customers
  - allocated duties/responsibilities
- working knowledge of enterprise complaints handling procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- accurately clarifying the nature and extent of complaint
- identifying options for complaint resolution
- resolving complaint to customer satisfaction
- contributing to avoidance of further complaints
- communicating effectively with others involved in or affected by the work.

#### Context of, and specific resources for assessment

- Elements of competence contain both knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated work environment covering a range of customer types
- The following are required:
  - a workplace or simulated workplace
  - enterprise or equivalent policy and procedures relating to customer service and complaint handling processes
  - enterprise or equivalent instructions related to legal implications of customer relations and complaints
  - a range of customers with complaints (real or simulated)
  - a qualified workplace assessor.

#### Method of assessment

- This unit may be assessed in conjunction with other units forming part of the job role or function
- It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

#### Guidance information for

**EVIDENCE GUIDE****assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Complaints**

Complaints may include:

- matters related to personal interaction with customers, incorrect products, faulty products, charging/costing policy, delivery system failures, installation deficiencies and service delays

**Customers**

Customers may be regular or new and may have routine or special requests. They may include persons from a range of social, cultural or ethnic backgrounds and physical and intellectual abilities. Regardless, customers are made feel welcome, valued and, at end of the process, satisfied. Customer contact may be face to face, by telephone, by electronic means or in writing

**Customer service**

Customer service may include:

- enterprise activities, internal and external customers and follow-up in event of delays in service provision

**Customer needs**

Customer needs may include:

- information regarding products or services available, quality of products or services, complementary products or services, enterprise facilities and services and location of specific items

**Staff**

Staff may be:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• full-time, part-time or casual and vary in terms of staff training, product knowledge and in staffing levels (e.g. staff shortages)</li> <li>• operating in routine or busy trading conditions</li> </ul>
<b>Enterprise</b>	Enterprises may vary in size, type and location, in range of merchandise and services provided and in delivery policies
<b>Communication</b>	<p>Communications may be:</p> <ul style="list-style-type: none"> <li>• verbal, written, by telephone, by electronic or other available means</li> </ul>
<b>Record keeping</b>	Accurate records of information are completed and may be stored manually, electronically or by other means
<b>Resources</b>	<p>Resources may include:</p> <ul style="list-style-type: none"> <li>• enterprise or equivalent policy and procedures relating to customer service and complaint handling processes</li> <li>• enterprise or equivalent instructions related to legal implications of customer relations and complaints</li> <li>• a range of customers with complaints (real or simulated)</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• enterprise policies and procedures relating to customer service, equipment and product manufacturer/component supplier specifications, enterprise operating procedures, industry/workplace codes of practice, customer requirements</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Sales and Parts, Administration and Management
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Administration
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## AURSAA2002 Maintain customer aftermarket relations

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to work in an aftermarket role in customer relations. It covers communication processes, addressing customer needs, and other post-sale and service activities.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to those working in an automotive administration or sales-related position in a wide range of automotive workplace that build after-market long-term relationships with customers.</p> <p>These people provide advice and after-market support to customers in the automotive retail, service and repair sectors of the industry.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish customer needs	<p>1.1. <i>Customer</i> needs are regularly monitored via formal and informal <i>communication</i> channels</p> <p>1.2. Products and services are assessed against customer needs to determine the ability of the workplace to meet customer aftermarket needs</p> <p>1.3. Trends in customer service needs are documented and reported to appropriate persons periodically for planning purposes</p>
2. Update workplace customer database	<p>2.1. Customer <i>database</i> and documents are regularly updated and vital data is kept for existing and potential customers</p> <p>2.2. Customer data is maintained to ensure databases are current</p> <p>2.3. Information on customers' sales and service history is gathered and entered into database</p>
3. Process customer feedback	<p>3.1. Customer requirements are determined</p> <p>3.2. Customer requirements are responded to according to <i>workplace policies and procedures</i></p> <p>3.3. Customer is contacted where appropriate to clarify and confirm feedback</p> <p>3.4. Response to customer is provided in a satisfactory manner that meets expectations</p>
4. Maintain professional treatment of customer	<p>4.1. Workplace sales and service policy standards are regularly reviewed to ensure customer expectations are met</p> <p>4.2. <i>Customer loyalty</i> strategies are established and implemented to secure customer loyalty</p> <p>4.3. Customer service is provided in a professional manner</p> <p>4.4. Work activities are reviewed regularly to ensure customer requirements are met</p> <p>4.5. Staff are actively involved in providing customer information to improve sales and service operations and activities</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to:
  - recognise a customer problem or potential problem and take action
  - adapt sales and service activities to customer aftermarket relations and communications
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information in written job instructions, specifications, standard operating procedures, lists, drawings and other reference documents
- numeracy skills to interpret workplace charts and database
- planning and organising skills to:
  - plan aftermarket activities and processes
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate customer communication procedures
  - recognise own limitations and seek advice
  - follow workplace policy
- teamwork skills to:
  - work with diverse individuals and groups
  - apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technology skills to use IT to collect and store customer information

#### Required knowledge

- procedures for customer service
- product knowledge
- processes for maintaining customer databases
- strategies for dealing with difficult customers
- allocated duties and responsibilities

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- workplace services
- location of departments, sections and telephone extensions
- workplace procedures and processes for customer service relating to:
- workplace health and safety (WHS)
- consumer law
- fair trading legislation

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- maintain relevant and current customer databases according to workplace policies and procedures
- monitor, review and assess customer needs and trends
- ensure appropriate treatment of customers.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- a workplace or simulated workplace
- information relating to customer service
- telephone directory
- legislation and codes of practice
- computer
- database software
- customer information and workplace policies and procedures
- a range of customers with different requirements, real or simulated

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- a communication system or a range of communication equipment
- real or simulated customer database.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Customer</i></b> may include:	<ul style="list-style-type: none"> <li>• regular client</li> <li>• new client</li> <li>• person or workplace receiving product or service</li> <li>• person or workplace with the potential to receive product or service</li> <li>• colleague.</li> </ul>
<b><i>Communication</i></b> may include:	<ul style="list-style-type: none"> <li>• email</li> <li>• Facebook</li> <li>• face-to-face</li> <li>• surveys</li> <li>• telephone</li> <li>• Twitter</li> <li>• written and verbal.</li> </ul>
<b><i>Database</i></b> may include:	<ul style="list-style-type: none"> <li>• customer contact details</li> <li>• purchase history</li> <li>• services history</li> <li>• information and enquiry requests</li> <li>• special customer requests and needs</li> <li>• workplace customer rating</li> <li>• business, social and individual group listing.</li> </ul>
<b><i>Workplace policies and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace operational policies and procedures</li> <li>• workplace customer service policy</li> <li>• product manufacturer and component supplier specifications</li> <li>• legislative and regulatory requirements</li> <li>• industry codes of practice</li> <li>• customer follow-up procedures</li> <li>• post-sale and post-service workplace policy.</li> </ul>
<b><i>Customer loyalty</i></b> may include:	<ul style="list-style-type: none"> <li>• product and services update</li> <li>• quality of products or services</li> <li>• complementary products or services</li> <li>• client reward schemes</li> <li>• credit or discount facilities</li> <li>• formal letters of thanks</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

- promotional items
- follow-up phone calls.

**Unit Sector(s)**

<b>Competency field</b>	Sales and Parts, Administration and Management
<b>Unit sector</b>	Administration

**Custom Content Section**

Not applicable.

## AURSBA2001 Carry out warehousing procedures

### Modification History

Release	Comment
Release 1	Replaces AURS239508A Carry out warehousing procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to receive, store and dispatch goods at a local enterprise storage facility.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Receive incoming goods	1.1.Cleanliness and orderliness in receiving bay are maintained according to enterprise policy 1.2.Goods are unpacked using correct techniques and equipment in line with enterprise policy 1.3.Packing materials are removed and disposed of according to enterprise policy 1.4.Incoming stock is checked and validated against purchase orders and delivery documentation according to enterprise policy 1.5.Items received are inspected for damage, quality, use-by dates, breakage or discrepancies and documented according to enterprise policy 1.6.Stock levels are accurately documented on enterprise stock systems, according to enterprise policy
2. Store goods	2.1.Deliveries are promptly and safely transported to the storage area without damage to product or packaging 2.2.Containers are labelled according to contents 2.3.Goods are transferred to suitable containers and are placed safely in the storage area, with old stock to the front 2.4.Goods are stored at correct temperatures to maintain optimum quality 2.5.Storage procedures are carried out according to industry regulations/guidelines, workplace health and safety (WHS) legislation, statutory legislation and regulations and enterprise policies and procedures
3. Dispatch goods	3.1.Goods to be returned to supplier are identified and labelled with date, supplier and reason for return or referred to management 3.2.Credit request documentation is completed 3.3.Goods are stored securely while awaiting dispatch 3.4.Delivery documentation is completed 3.5.Special delivery instructions are noted 3.6.Items are packed safely and securely to avoid damage in transit 3.7.Goods are dispatched to appropriate area/department

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related warehousing procedures
- plain English literacy skills in relation to stock records and delivery documentation
- operation skills and techniques in following set routines and procedures
- work with others and in a team by consulting with experienced staff to carry out warehousing procedures
- numerical skills in relation to completing stock records and delivery documentation
- establish diagnostic processes including problem-solving and analytical skills for a range of unpredictable circumstances relevant to warehousing procedures
- technical skills in the use of electronic labelling/ticketing equipment and mechanical handling equipment

#### Required knowledge

- operational knowledge of enterprise policies and procedures in regard to:
  - storage of stock
  - enterprise labelling policy
  - product quality standards
  - unpacking of goods
  - out of date, missing or damaged stock
  - equipment used
  - stock location
  - waste disposal
  - methods of storage
  - delivery documentation
  - stock record documentation
  - dispatch documentation
- operational knowledge of manual handling and safe lifting techniques
- basic operational knowledge of legislation and statutory requirements, including WHS requirements
- basic operational knowledge of industry codes of practice

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competency to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- consistently applying enterprise policies and procedures, industry codes of practice and legislation and statutory requirements in regard to storage of stock
- consistently applying safe work practices in the manual handling and moving of stock, according to WHS legislation/regulations/codes of practice
- consistently applying safe work practices in the mechanical handling and moving of stock, according to WHS legislation/regulations/codes of practice
- interpreting and applying manufacturer/component supplier instructions with regard to handling stock and using equipment
- receiving and processing incoming goods and dispatching outgoing goods according to enterprise policies and procedures
- interpreting and processing information accurately and responsibly.

#### Context of, and specific resources for assessment

- Elements of competence contain both knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated worksite
- Evidence is best gathered using products, processes and procedures of the individual workplace as the means by which the candidate achieves industry competencies
- The following are required:
  - a workplace or simulated workplace
  - access to equipment, including stock moving equipment, manual and electronic labelling/ticketing equipment and computers/stock recording equipment
  - documentation, such as invoices, packing slips, dispatch documentation, order forms, store policy and procedures manuals, WHS regulations, legislative and statutory requirements and industry codes of practice

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>a qualified workplace assessor.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>An integrated competency assessment approach is required to ensure that holistic assessment occurs for inter-related units of competency. This unit should be assessed in conjunction with other units within the context of the candidate's job role or function</li> <li>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Enterprise</b>	Enterprises may vary in size, type and location, in the range of stock or goods to be stored, in the equipment used and in delivery procedures
<b>Legislative requirements</b>	<p>Legislative requirements include:</p> <ul style="list-style-type: none"> <li>state/territory legislation related to WHS, particularly, manual and mechanical handling and storage/dispatch of hazardous substances</li> </ul>
<b>Stock</b>	Stock may need to conform to established quality guidelines, and may vary according to seasonal and supplier availability

<b>RANGE STATEMENT</b>	
<b>Stock handling</b>	Stock may be moved manually or mechanically Handling techniques may vary according to stock characteristics and industry codes of practice
<b>Staff</b>	Staff may be full-time, part-time or casual and vary in terms of training and staffing levels. Staff may be operating in routine or busy trading conditions
<b>Information</b>	Information may include: <ul style="list-style-type: none"> <li>enterprise policies and procedures with regard to stock or goods storage, dispatch and delivery, product manufacturer/component supplier specifications and industry codes of practice</li> </ul>
<b>WHS requirements</b>	WHS requirements may include: <ul style="list-style-type: none"> <li>state/territory legislation related to WHS, particularly manual and mechanical handling and storage/dispatch of hazardous substances</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Sales and Parts, Administration and Management
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Support and Logistics
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## AURSBA3002 Apply automotive parts interpretation process

### Modification History

Release	Comment
Release 1	Replaces AURS338103A Apply automotive parts interpretation process Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence to identify uncommon or unusual automotive parts based on evidence from customers and/or other sources which may include catalogue numbers, samples and verbal, written or graphic descriptions of parts or their purpose.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	The parts or vehicle may not be in common use and therefore research and/or interpretation may be required to identify and satisfy customer requirements.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify the part and its end use	1.1. Customer is made to feel welcome and valued 1.2. Available information on required part is gathered, documented and confirmed with customer 1.3. End use or host for the part, i.e. vehicle/unit assembly or vehicle/unit assembly options, is established from an analysis of available information
2. Identify and record details of the part	2.1. The parts cataloguing system to host vehicle/unit is identified and accessed 2.2. Part is matched accurately with cataloguing information by accessing and using the catalogue system, its aids and user guides 2.3. Expert advice is sought from provider/supplier to clarify imprecise identification outcomes 2.4. Details of identity of the part are documented and processed
3. Part is supplied or ordered for customer	3.1. Customer accepts process used 3.2. Part is supplied or ordered if not in stock 3.3. Customer records are updated

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to technical literacy and interpretive skills sufficient to access keywords and phrases and to interpret schematics and technical drawings
- communicate ideas and information
- questioning and active listening skills, for example when eliciting information on product and end use issues
- plain English literacy and communication skills in relation to dealing with customer and providers/suppliers
- plan and organise activities when planning a logical approach to identify part/product
- work with others and in a team by seeking assistance from team members
- use mathematical ideas and techniques to estimate quantities if part/product is to be

**REQUIRED SKILLS AND KNOWLEDGE**

ordered

- establish diagnostic processes including problem-solving and analytical skills for a range of unpredictable circumstances, for example, clarifying a general need and researching through parts catalogue systems to correctly identify part or technically acceptable options. This may involve recognition of pathways addressing country of origin, historic or period-based terminology/language variations
- use workplace technology related to computing skills in relation to accessing and interpretation of computer-based parts catalogue systems

**Required knowledge**

- general knowledge of current and historic automotive terminology
- general knowledge of main automotive systems and assemblies and their functions
- general knowledge of historic background to the parts system
- general knowledge of range of manual and computerised parts catalogue systems in common usage throughout industry
- detailed knowledge of the parts catalogue systems, both brand specific and general options, used by enterprise
- general knowledge of legal issues associated with supply and use of non-conforming parts/components/accessories
- broad knowledge of workplace health and safety (WHS) in relation to customer safety and ergonomics of computer workstations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- eliciting sufficient information from the customer and/or other sources to enable a confirmed identification of vehicle or unit the part is intended
- identifying and locating parts catalogue systems associated with required vehicle/unit
- using parts catalogues and equivalent documentation, both hard copy and electronic, to trace and identify specific brand parts
- using parts catalogues and equivalent documentation, both hard copy and electronic medium, to trace and identify general or optional parts/products.

#### Context of, and specific resources for assessment

- Assessment is to cover both manual and computer-aided/ based parts catalogue systems
- Assessment of this unit must be completed on the job or in a simulated work environment reflecting a range of parts identification requirements in terms of available information, customer types and complexity of parts tracking.
- Assessment must cover both specified brand and general parts and is to occur in an environment where competing demands of a number of customers are evident
- The following are required:
  - a workplace or simulated workplace
  - customers and requests for parts information
  - parts cataloguing systems (both computerised and manual)
  - a qualified workplace assessor.

#### Method of assessment

- It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances.
- Customers, team leaders/members or other appropriate persons, subject to agreed authentication arrangements,

**EVIDENCE GUIDE**

	<p>may provide evidence of performance</p> <ul style="list-style-type: none"> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li> <li>• This unit should be assessed in conjunction with other units within context of the candidate's job role or function.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Automotive parts</b>	<p>Automotive parts may include:</p> <ul style="list-style-type: none"> <li>• automotive parts, components and accessories specific to vehicle type or are for general use by industry. They will generally be for older, rare or specialised vehicles</li> </ul>
<b>Customers</b>	<p>Customers include both external and internal customers who may be technically qualified to describe parts, or technical novices requiring detailed support. Regardless, customers are made feel welcome, valued and, at end of the process, satisfied</p>
<b>Vehicle/unit identity options</b>	<p>An examination of a sample of required part or customer vehicle may be necessary to clarify situation</p>
<b>Solution</b>	<p>Solution is not necessarily apparent where hybrid vehicles/units are concerned and a range of options may need to be identified and pursued</p>

<b>RANGE STATEMENT</b>	
<b>Legislative requirements</b>	<p>Legislative requirements include:</p> <ul style="list-style-type: none"> <li>state/territory legislation related to WHS and Australian Design Rules</li> </ul>
<b>Communications</b>	<p>Communications with customer/user may be:</p> <ul style="list-style-type: none"> <li>face to face, by telephone or by other electronic means</li> </ul>
<b>Recording of information</b>	<p>Recording of information provided by customer may need to be used when customer is no longer present and therefore an accurate record of information needs to be completed, retained and recovered when needed</p>
<b>Resources</b>	<p>Resources may include:</p> <ul style="list-style-type: none"> <li>hard copies of catalogues, databases and access to internet</li> </ul>
<b>Parts information</b>	<p>Parts information may include:</p> <ul style="list-style-type: none"> <li>manufacturer/component supplier specifications and technical documentation, enterprise procedures and documentation, enterprise or industry comparative specifications, diagrams, sketches, verbal descriptions and physical and visual evidence</li> </ul> <p>This may range from an accurate catalogue number or reference to a generalised description of purpose by a customer who has little technical knowledge or expertise</p>
<b>Information gathering techniques</b>	<ul style="list-style-type: none"> <li>Customer may require active assistance and questioning to fully describe requirement in terms of vehicle/unit model, date of manufacture, purpose and appearance of the part and other tracking information</li> <li>Customer may be seeking an inappropriate solution to a technical problem and if sufficient doubt exists, may require referral to a service provider</li> </ul>
<b>Parts cataloguing systems</b>	<p>Parts cataloguing systems may be:</p> <ul style="list-style-type: none"> <li>hard copy (book-fast, loose-leaf) micro-fiche/micro-film, stand-alone computer or networked/on-line computer-supported services</li> </ul>

RANGE STATEMENT	
	Depending on age of required part, any or all of above systems may need to be accessed
<b>Catalogue system aids and user guides</b>	Catalogue system aids and user guides may include: <ul style="list-style-type: none"><li>• written instructions within the system, guides in the form of diagrams, flow charts and process schematics, menus and prompts and one to three dimensional system/component diagrams, models and graphics</li></ul>
<b>Provider/supplier information</b>	Provider/supplier information is not always required, but should be sought or accessed where incorrect identification of parts may result in legal liability, customer dissatisfaction and/or alienation

## Unit Sector(s)

<b>Unit sector</b>	Sales and Parts, Administration and Management
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Support and Logistics
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## AURSCA2001 Select automotive parts and products

### Modification History

Release	Comment
Release 1	<p>Replaces AURS238127A Identify and select automotive parts and products</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the competence required to identify automotive parts and products based on evidence from customers and/or other sources which may include catalogue numbers or samples of parts/products or their purpose.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>It requires application of both manual and computer based catalogue or equivalent systems.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify the part/product and its end use	1.1.Customer is made to feel welcome and valued 1.2.Available information on the required part/product is gathered, documented and confirmed with customer 1.3.End use or host for the part/product, i.e. vehicle/unit assembly or vehicle/unit assembly options, is established from an analysis of available information
2. Identify details of the part/product	2.1.The parts/product cataloguing system is identified and accessed 2.2.Part/product is matched accurately with cataloguing information by accessing and using the catalogue system 2.3.Details of identity of the part/product are documented and processed
3. Part/product is supplied or ordered for customer	3.1.Customer accepts process used 3.2.Part/product is supplied or ordered if not in stock 3.3.Customer records are updated

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customer and team members
- apply questioning and active listening skills, for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good

**REQUIRED SKILLS AND KNOWLEDGE**

- use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons, including product specialists, both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
  - establish safe and effective work processes which anticipate and/or resolve problems, to systematically develop solutions to avoid or minimise reworking and to avoid wasting customer time
  - use mathematical ideas and techniques to correctly calculate material requirements, estimate and calculate costs and establish quality checks
  - use workplace technology related to customer services, including use of measuring equipment, computerised technology, use of communication devices and reporting/documenting of results

**Required knowledge**

A working knowledge of:

- workplace health and safety (WHS) in relation to customer safety and ergonomics of computer workstations
- common automotive terminology
- the main automotive systems and assemblies and their functions
- the parts/product catalogue systems, both brand-specific and general options, used by enterprise
- the legal issues associated with the supply and use of non-conforming parts/components/accessories
- enterprise quality processes
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- eliciting sufficient information from the customer and/or other sources to enable a confirmed identification of vehicle or unit the part/product intended
- accessing the parts/products catalogue systems associated with required vehicle/unit
- using both manual and computer-based parts/products catalogues and equivalent documentation to trace and identify common specific brand parts/products
- communicating effectively with others involved in or affected by the work.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - information and material identifying and selecting automotive parts and products
  - equipment identifying and selecting automotive parts and products
  - activities covering task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related

**EVIDENCE GUIDE**

	<p>conditions (real or simulated) and require evidence of process.</p> <ul style="list-style-type: none"> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Automotive part/product**

Automotive part/product may include:

- automotive parts, components and accessories specific to vehicle type or are for use by industry, and refinishing and treatment products

**Customers**

Customers include both external and internal customers who may be technically qualified to describe parts/products, or technical novices requiring detailed support. Regardless, customers are made feel welcome, valued and, at end of the process, satisfied

<b>RANGE STATEMENT</b>	
<b>Part/product information</b>	<p>Part/product information may include:</p> <ul style="list-style-type: none"> <li>manufacturer/component supplier specifications and technical documentation, enterprise procedures and documentation, enterprise or industry specifications, diagrams, sketches, verbal descriptions and physical and visual evidence</li> </ul>
<b>Information gathering techniques</b>	<p>Customer may require active assistance and questioning to fully describe requirement in terms of common vehicle/unit model, date of manufacture, purpose and appearance of product and other tracking information</p>
<b>Recording of information</b>	<p>Information provided by customer may need to be used when customer is no longer present and therefore an accurate record of information needs to be completed, retained and recovered when needed</p>
<b>Parts/products cataloguing systems</b>	<p>Parts/products cataloguing systems may be hard-copy (book-fast, loose-leaf), stand-alone computer or networked/online computer-supported services</p>
<b>Provider/supplier information</b>	<p>Provider/supplier information is not always required, but should be sought or accessed where incorrect identification of the part/product may result in legal liability, customer dissatisfaction and/or alienation</p>
<b>WHS requirements</b>	<p>WHS is to be in accordance with legislation/regulations/ codes of practice and enterprise safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire-fighting equipment, enterprise first-aid, hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>

<b>RANGE STATEMENT</b>	
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• conduct of operational risk assessment and treatments associated with customer safety and working in proximity to others and site visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• pollution and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards, enterprise quality policy, standards, operations and procedures</li> </ul>
<b>Legislative requirements</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and may include site specific instructions, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, product specifications, catalogues, equipment manuals, databases, internet, material safety data sheets (MSDS) and graphical instructions</li> <li>• safe work procedures related to site and customer safety</li> <li>• regulatory/legislative requirements pertaining to commercial and retail operations and facilities</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• organisational work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Sales and Parts, Administration and Management
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Sales and Marketing
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## AURSCA2002 Present stock and sales area

### Modification History

Release	Comment
Release 1	Replaces AURS238150A Present stock and sales area Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit of competency covers the competence required to establish and maintain stock and sales area.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	This unit of competency applies to the following and should be contextualised to the qualification it is being applied: <ul style="list-style-type: none"><li>• retail, service and repair.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Maximise and maintain presentation of vehicle/ products for sale	1.1.Vehicle/product is clean and prepared to maximise market appeal in accordance with enterprise policies and procedures 1.2.Vehicle/product is placed in correct position to maximise presentation 1.3.Vehicle/product condition is monitored and action taken where necessary to maintain maximum market appeal
2. Maximise presentation of sales area	2.1.Presentation area is defined from floor plan in accordance with enterprise policies and procedures 2.2.Minimum vehicle/product numbers/types are determined and presented 2.3.Display areas are clean, tidy and safe 2.4.Correct handling, storage and display techniques are adopted according to vehicle/product types, enterprise and industry practices
3. Review acceptance of presentation of stock and sales area	3.1.Feedback from customers is sought 3.2.Customer feedback is collated and analysed 3.3.Action is taken

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, analyse and understand information related to feedback from customers
- communicate ideas and information to draft presentation to management for support
- plan and organise activities to design presentation area
- work with others and in a team by involving other members of sales team in design and maintenance
- use mathematical ideas and techniques to develop roster to maintain area
- establish diagnostic processes for which design is both practical and safe
- use workplace technology related to process feedback

**REQUIRED SKILLS AND KNOWLEDGE****Required knowledge**

- enterprise policies and procedures
- enterprise sales presentation area and floor plan arrangements
- vehicle/product preparation and presentation techniques
- vehicle/product models/types

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- presenting vehicle/products in a manner to maximise market appeal
- maintaining suitable sales presentation area
- communicating effectively with others involved in or affected by the work.

#### Context of, and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job
- The following are required:
  - vehicle/products for sale
  - suitable presentation area
  - sales material (e.g. brochures, pamphlets, banners, flags, stands, ramps, turntables)
  - a qualified workplace assessor.

#### Method of assessment

- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- Prescribed outcome must be able to be achieved without direct supervision.
- Practical assessments:
  - present vehicle/products to maximise market appeal
  - maintain maximum merchandising effect of sales presentation area.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

#### Guidance information for assessment

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>• application of vehicle/product preparation/presentation techniques</li> <li>• application of procedures for maximising vehicle/product presentation area</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements may include:</p> <ul style="list-style-type: none"> <li>• state/territory/industry WHS requirements</li> </ul>
<b>Resources may include</b>	<p>Resources may include</p> <ul style="list-style-type: none"> <li>• vehicles/products for sale</li> <li>• suitable presentation area</li> <li>• sales material (e.g. brochures, pamphlets, banners, flags, stands, ramps, turntables)</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• manufacturer/component supplier specifications</li> <li>• enterprise operating procedures</li> <li>• product manufacturer/component supplier specifications</li> <li>• customer requirements</li> <li>• industry/workplace codes of practice</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Sales and Parts, Administration and Management
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Sales and Marketing
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## AURSCA2003 Apply sales procedures

### Modification History

Release	Comment
Release 1	Replaces AURS241303A Apply sales procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to use sales techniques and encompasses key selling skills from approaching customer to closing sale. It requires a basic level of product knowledge.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competency applies to the following and should be contextualised to the qualification it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair administration/sales selling products/services.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Demonstrate product knowledge	1.1. Knowledge of use and application of products and services is demonstrated 1.2. Experienced sales staff or product information guide are consulted to increase product knowledge
2. Approach customer	2.1. Timing of customer approach is determined and applied 2.2. Effective sales approach is identified and applied 2.3. Positive impression is conveyed to arouse customer interest 2.4. Knowledge of customer buying behaviour is demonstrated 2.5. Customer is focused on specific merchandise
3. Customer response	3.1. Questioning techniques are applied to determine customer buying motives 3.2. Listening skills are used to determine customer requirements 3.3. Non-verbal communication cues are interpreted and clarified 3.4. Customers are identified by name where possible
4. Apply product knowledge	4.1. Customer needs are matched to products and services 4.2. Knowledge of product features and benefits are communicated clearly to customers 4.3. Product use and safety requirements are described to customers 4.4. Customers are referred to product specialist 4.5. Routine customer questions about merchandise, e.g. price, price reductions, quality and usage, are answered accurately and honestly or referred to more experienced sales staff
5. Gather information	5.1. Customer objections are identified and accepted 5.2. Objections are categorised into price, time and merchandise characteristics 5.3. Solutions are offered according to store policy 5.4. Problem solving is applied to overcome customer objections
6. Close sale	6.1. Customer buying signals are monitored, identified and responded to

ELEMENT	PERFORMANCE CRITERIA
	6.2.Customer is encouraged to make purchase decision 6.3.Method of closing sale is selected and applied 6.4.Legislative and legal sales requirements/procedures are followed
7. Maximise sales opportunities	7.1.Opportunities for making additional sales are recognised and applied 7.2.Customer is advised of complementary products or services according to identified needs 7.3.Personal sales outcomes are reviewed to maximise future sales

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to questioning customers to gain information on need
- communicate ideas and information to the operation of product and safety requirements
- plan and organise activities for the development of a sales approach
- work with others and in a team by consulting with experienced staff to develop product knowledge and sales techniques
- use mathematical ideas and techniques for accurate processing and recording of sale and payment method
- establish diagnostic processes which develop solutions to customer objections
- use workplace technology related to the use of business technology in processing sale

#### Required knowledge

- technical information
- equipment safety requirements
- personal safety requirements
- specific selling skills/sales techniques
- sales/consumer legislation/legal requirements
- vehicle/component details
- automotive industry product knowledge



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- selling enterprise product and services to customers
- interpreting and communicating information
- the ability to communicate with customers
- sales skills
- communicating effectively with others involved in or affected by the work

#### Context of, and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job
- The following are required:
  - a workplace or simulated workplace
  - persons including customers and sales staff
  - access to products
  - documentation, store policy and procedures manuals, WHS, legislative and statutory requirements and industry codes of practice
  - a qualified workplace assessor.

#### Method of assessment

- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment, in simulated workplace conditions is acceptable
- Prescribed outcome must be able to be achieved without direct supervision
- Practical assessments:
  - access, interpret and apply technical information
  - apply sales techniques and product knowledge
  - convey information both orally and in writing
  - access, interpret and apply sales information
  - sell products
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**EVIDENCE GUIDE****Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods include:

- face-to-face selling, telephone/electronic selling and product enquiries
- verbal, written and practical demonstrations

Other variables may include:

- regular and new customers
- sales may be face-to-face or telephone/electronic

**Workplace health and safety (WHS) requirements**

WHS requirements may include:

- state/territory/industry WHS requirements

**Resources**

Resources may include:

- product and services
- customers
- product and services
- customers
- videos, selling manuals, brochures, pamphlets, audio tapes
- company/industry guidelines

**Information/documents**

Sources of information/documents may include:

- manufacturer/component supplier specifications
- enterprise operating procedures

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• product manufacturer/component supplier specifications</li><li>• customer requirements</li><li>• industry/workplace codes of practice</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Sales and Parts, Administration and Management
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Sales and Marketing
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## AURSCA2004 Carry out cash, credit and funds transfers

### Modification History

Release	Comment
Release 1	<p>Replaces AURS241608A Carry out cash and/or credit/funds transfer transactions</p> <p>Unit code updated to meet policy requirements</p> <p>Minor change to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the competence required to undertake cash, cheque, credit/funds transfer card transactions. It also includes preparation and dispatch of debtor invoices.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence applies to the following and should be contextualised to the qualification it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair administration/sales finance - cash and non-cash transactions.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Handle cash transactions	1.1.Cash is received and counted 1.2. Correct balance is determined, taking price, invoices, discounts, etc. into account, and correct change is given 1.3. Irregularities are noted and referred to appropriate persons for resolution 1.4. Cash is stored according to enterprise policies and procedures 1.5. Receipts are issued and transaction documented according to enterprise policies and procedures
2. Handle credit/funds transfer card transactions	2.1. Correct documentation and equipment for particular credit/funds transfer card is identified and accessed 2.2. Credit/funds transfer card recording device is identified and accessed 2.3. Recording device is operated according to provider procedures and taking into account enterprise credit limits 2.4. Irregularities are noted and referred to appropriate persons for resolution 2.5. Receipts are issued and transaction documented according to enterprise policies and procedures
3. Handle cheque transactions	3.1. Cheques are received and examined for correctness (amount, dates and signature) 3.2. Irregularities are noted and referred to appropriate persons for resolution 3.3. Cheques are stored according to enterprise policies and procedures 3.4. Receipts are issued and transaction documented according to enterprise policies and procedures
4. Carry out invoicing procedures	4.1. Calculations are performed to produce accurate customer invoices 4.2. Documentation is completed to ensure accuracy of content 4.3. Invoices are distributed to appropriate persons/section for certification prior to being dispatched 4.4. Verified invoices are dispatched within designated time limits 4.5. Invoices are copied and filed for auditing purposes

ELEMENT	PERFORMANCE CRITERIA
	according to enterprise policies and procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to collation of cheques for processing
- communicate ideas and information on irregularities in cash balancing to appropriate persons
- plan and organise activities for the development of invoices
- work with others and in a team with office persons to develop invoices
- use mathematical ideas and techniques to count cash
- establish diagnostic processes which re-count cash and credit transactions to balance books
- use workplace technology related to record sales

#### Required knowledge

- money handling security methods
- personal safety requirements
- applicable legislation
- GST information
- equipment safety requirements
- enterprise transaction policies
- cash/credit/funds transfer systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<b>EVIDENCE GUIDE</b>	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>conducting cash and non-cash transactions</li> <li>preparation of invoices</li> <li>interpreting and communicating operational information</li> <li>safe work practices</li> <li>operation of office/sales equipment</li> <li>communicating effectively with others involved in or affected by the work.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>Underpinning knowledge and skills may be assessed on or off the job</li> <li>The following are required: <ul style="list-style-type: none"> <li>cash and non-cash transaction equipment</li> <li>computer software/hardware, calculator, office equipment, enterprise stationery, safes, cash register, EFTPOS systems, credit card systems, stock scanning/pricing equipment, postage equipment</li> <li>a qualified workplace assessor.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment in simulated workplace conditions is acceptable</li> <li>Prescribed outcome must be able to be achieved without direct supervision</li> <li>Practical assessments: <ul style="list-style-type: none"> <li>recognise denominations of Australian currency notes and coinage</li> <li>access and apply cash/credit systems</li> <li>receive cash, perform calculations and give correct change</li> <li>use equipment</li> <li>handle cash correctly</li> <li>use security systems (where applicable)</li> <li>prepare and dispatch invoices</li> </ul> </li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>

**EVIDENCE GUIDE****Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods include:

- conducting sales transactions using cash and non-cash procedures
- telephone, fax, written communication, verbal
- preparation of debtor invoices

Specific requirements may include:

- literacy/numeracy

**Workplace health and safety (WHS) requirements**

WHS requirements may include:

- state/territory/industry WHS requirements

**Resources**

Resources may include:

- cash and non-cash transaction equipment
- invoice dispatching system
- computer software/hardware, calculators, office equipment, enterprise stationery, safes, cash register, EFTPOS systems, credit card systems, stock scanning/ pricing equipment, postage equipment

**Information/documents**

Sources of information/documents may include:

- enterprise operating procedures
- job cards
- product manufacturer/component supplier specifications
- company stationery

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• customer requirements</li><li>• industry/workplace codes of practice</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Sales and Parts, Administration and Management
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Sales and Marketing
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## AURSCA2005 Sell products

### Modification History

Release	Comment
Release 1	Replaces AURS241769A Sell product(s) Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the competence required to make best use of time available, use specific sales techniques, and follow procedures for product delivery and customer follow-up.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence applies to the following and should be contextualised to the qualification it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Present and demonstrate product to customer	1.1.Product is presented to customer to maximise its features and market appeal in relation to customer perceived needs 1.2.Product features, fittings, controls and accessories are shown and talked through with customer and operated where necessary 1.3.Customer is offered a test operation
2. Obtain customer agreement to purchase product	2.1.Price for product is negotiated and agreed 2.2.Sale is made using closing technique according to automotive industry/enterprise policies and procedures 2.3.Sale is made in accordance with legal requirements
3. Perform product delivery and customer follow-up procedures	3.1.Product is delivered to customer in accordance with manufacturer/component supplier specification and industry/enterprise policies and procedures 3.2.Customer satisfaction is determined, remedial action is taken where necessary to maximise repeat business possibilities
4. Use prospecting methods to locate potential market	4.1.Potential customers are identified by follow-up of enterprise records of existing/past customers, service area customers, industry contacts and advertising strategies 4.2.Plans are developed to contact potential customers

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to collect and interpret technical information
- communicate ideas and information to convey information to the customer
- plan and organise activities for sales demonstration
- work with others and in a team by consulting with experienced staff
- use mathematical ideas and techniques to include customer limitations of price and

**REQUIRED SKILLS AND KNOWLEDGE**

time in recommendations

- establish diagnostic processes which have legal requirements included in recommendations
- use workplace technology related to record sales

**Required knowledge**

- selling procedures
- communication skills (oral and written)
- communication techniques
- product information
- company policies and procedures
- stock presentation techniques
- industry legal requirements
- finance, leasing and insurance contracts/policies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- selling products to satisfy customer needs
- use of sales techniques
- communicating effectively with others involved in or affected by the work.

#### Context of, and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job
- The following are required:
  - a workplace or simulated workplace
  - sales manuals, time management guides, enterprise/industry guidelines and office equipment (e.g. computer, typewriter, telephone and fax)
  - sales videos, sales brochures
  - enterprise-based sales recording systems
  - various products retailed via automotive industry
  - a qualified workplace assessor.

#### Method of assessment

- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment in simulated workplace conditions is acceptable
- Prescribed outcome must be able to be achieved without direct supervision
- Practical assessments:
  - sell product(s) to satisfy customer needs in accordance with enterprise policies and procedures
  - use specific sales techniques
  - convey information both orally and in writing
  - access, interpret and apply sales information
  - apply time management techniques
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**EVIDENCE GUIDE****Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods include:

- demonstration to customer using sales techniques applied to product sold for or through automotive industry
- verbal, written, practical
- customers may be face to face or by telephone/ electronic media

**Workplace health and safety (WHS) requirements**

WHS requirements may include:

- state/territory/industry WHS requirements

**Resources**

Resources may include:

- sales manuals, time management guides, enterprise/industry guidelines, office equipment (e.g. computer, typewriter, telephone and fax)
- sales videos, sales brochures
- enterprise-based sales recording systems
- various products retailed via automotive industry

**Information/documents**

Sources of information/documents may include:

- enterprise operating procedures
- product manufacturer/component supplier specifications
- customer requirements
- industry/workplace codes of practice

**Unit Sector(s)**

<b>Unit sector</b>	Sales and Parts, Administration and Management
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Sales and Marketing
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## AURSCA2006 Promote products and services

### Modification History

Release	Comment
Release 1	Replaces AURS242621A Promote products and services Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to promote and sell products and services to current and potential customers, establish on-sell opportunities in a sales situation, and recommend complementary products and services to customers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competence applies to the following and should be contextualised to the qualification it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Promote products and services to customers	1.1.Explanations/demonstrations, where applicable, are conducted professionally 1.2.Product benefits and relevance of product to customer needs are highlighted during demonstration 1.3.Selling techniques are employed based on accepted and industry standards, legal requirements and enterprise policy
2. Establish on-sell opportunities	2.1.Customer interest areas and needs are identified 2.2.On-sell opportunities are assessed through knowledge of customer needs and interests, and enterprise products and services 2.3.Explanations are aligned to customer interest areas and needs 2.4.Customer needs for complementary products or services are determined
3. Recommend complementary products or services to customers	3.1.Complementary products or services of benefit to customer are identified 3.2.Benefits of product or service are discussed with customer 3.3.Cost estimates are prepared and documented

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to customer information when collected and analysed for on-selling
- communicate ideas and information when features and benefits are explained to customers
- plan and organise activities when promotions are planned and organised
- work with others and in a team by seeking involvement of team members
- use mathematical ideas and techniques when cost estimates are prepared for promotions
- establish diagnostic processes having cost and time limitations when considered in recommendations

**REQUIRED SKILLS AND KNOWLEDGE**

- use workplace technology related to business technology used to prepare cost estimates

**Required knowledge**

- workplace health and safety (WHS)
- oral and written communication skills for application
- buyer behaviour
- selling procedures/techniques
- product and service promotional procedures for application
- legislation/regulations/guidelines applicable to the industry sector
- advertising codes of practice

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- promoting products and services to customers and establishing on-selling opportunities
- communicating effectively with others involved in or affected by the work.

#### Context of, and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job
- The following are required:
  - products for sale
  - suitable presentation area
  - sales material (e.g. brochures, pamphlets, banners, flags, stands, ramps, turntables)
  - a qualified workplace assessor.

#### Method of assessment

- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment, in simulated workplace conditions is acceptable
- Prescribed outcome must be able to be achieved without direct supervision
- Practical assessments:
  - behave professionally in a manner appropriate to the situation and customer needs
  - demonstrate a range of products in a professional manner
  - apply promotional sales techniques to a range of sales situations and customer needs
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Promotion</b>	Promotion may include: <ul style="list-style-type: none"> <li>planned sales presentation, territory management and account management</li> </ul>
<b>Selling</b>	Selling may include: <ul style="list-style-type: none"> <li>face to face, telephone, direct mail and internet</li> </ul>
<b>Sales</b>	Sales may include: <ul style="list-style-type: none"> <li>individual customers</li> <li>organisational customers</li> <li>new products</li> <li>second-hand products</li> </ul>
<b>Professional explanations/demonstrations</b>	Professional explanations/demonstrations may include: <ul style="list-style-type: none"> <li>parts</li> <li>products</li> <li>services</li> </ul>
<b>Customer needs</b>	Customer needs may include: <ul style="list-style-type: none"> <li>time limitations</li> <li>cost limitations</li> <li>value for money</li> <li>quality of work/product</li> <li>after-sales service</li> </ul>
<b>Industry standards</b>	Industry standards for selling products and services include those relating to: <ul style="list-style-type: none"> <li>fair trade</li> <li>consumer protection</li> <li>ethical behaviour</li> <li>WHS requirements</li> <li>legislative requirements</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• credit legislation</li> </ul>
<b>Complementary products/services</b>	Complementary products/services may include: <ul style="list-style-type: none"> <li>• accessories</li> <li>• additional service/repair work</li> <li>• additional vehicle features</li> </ul>
<b>WHS requirements</b>	WHS requirements may include: <ul style="list-style-type: none"> <li>• state/territory/industry WHS requirements</li> </ul>
<b>Resources may include</b>	Resources may include: <ul style="list-style-type: none"> <li>• enterprise stationery, telephone, merchandising kit and pricing policy</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• enterprise operating procedures</li> <li>• product manufacturer/component supplier specifications</li> <li>• customer requirements</li> <li>• industry/workplace codes of practice</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Sales and Parts, Administration and Management
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Sales and Marketing
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## AURSCA3007 Determine used motor vehicle stock requirements

### Modification History

Release	Comment
Release 1	Replaces AURS338216A Determine used motor vehicle stock requirements Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to research enterprise records and persons to decide the preferred used vehicle stock to purchase.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competence applies to the following and should be contextualised to the qualification it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair - administration/sales vehicle sales.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information to assist decision on used vehicle stock requirements	1.1.Procedures for collecting required data are identified and adopted 1.2.Data is obtained from the enterprise's used vehicle sales and managerial staff 1.3.Data is collected from the enterprise's used vehicle sales history records
2. Determine preferred used vehicle stock required	2.1.Data collected from different sources is compared and analysed 2.2.Preferred used vehicle stock requirements are established 2.3.Budget is set for vehicle stock required
3. Identify sources/ providers of required vehicle stock	3.1.Data is collected on history of vehicle purchases 3.2.Additional sources of preferred vehicle stock are researched and identified 3.3.Experienced enterprise staff are consulted for sources of preferred vehicle stock

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to collation of vehicle sales history
- communicate ideas and information to experienced staff when consulted for assistance
- plan and organise activities when planning collection of information to determine stock requirements
- work with others and in a team by involving experienced staff in decisions
- use mathematical ideas and techniques to ensure stock requirements are determined within budget
- establish diagnostic processes with differences in staff views being negotiated
- use workplace technology related to use of business technology to determine requirements

#### Required knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

- research and analysis techniques
- workplace record systems
- enterprise policies and procedures

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• data collection and analysis</li> <li>• assessing and interpreting workplace records</li> <li>• communicating with others in the workplace</li> <li>• communicating effectively with others involved in or affected by the work.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• Underpinning knowledge and skills may be assessed on or off the job</li> <li>• The following are required: <ul style="list-style-type: none"> <li>• used vehicle sales history records</li> <li>• enterprise-specific records, newspapers, magazines, stock records, statutory requirements, industry pricing guides</li> <li>• a qualified workplace assessor.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable</li> <li>• Prescribed outcome must be able to be achieved without direct supervision</li> <li>• Practical assessments: <ul style="list-style-type: none"> <li>• research data to determine used vehicle stock levels</li> </ul> </li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods include:

- collecting data
- checking, comparing and analysing data

Other variables may include:

- manual and/or computer records

**Resources**

Resources may include:

- sales and management staff
- used vehicle sales history records
- computer hardware/software, calculators, office equipment
- enterprise-specific records, newspapers, magazines, stock records, statutory requirements and industry pricing guides

**Workplace health and safety (WHS) requirements**

WHS requirements may include:

- state/territory /industry WHS requirements

**Information/documents**

Sources of information/documents may include:

- vehicle manufacturer/component supplier specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer/component supplier specifications
- customer requirements

**Unit Sector(s)****Unit sector**

Sales and Parts, Administration and Management

## Co-requisite units

Not applicable.

## Competency field

Competency field	Sales and Marketing
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## AURSCA3008 Wholesale used motor vehicle stock

### Modification History

Release	Comment
Release 1	Replaces AURS342369A Wholesale used motor vehicle stock Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the competence required to research organisation records and persons to assist with decision-making process to wholesale used vehicle stock and determine surpluses.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competency applies to the following and should be contextualised to the qualification it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair - administration/sales.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Canvass dealership persons to assist with deciding which vehicles to wholesale	1.1.Procedures for collecting data are established 1.2.Information is collected and documented 1.3.Collected information is compared from different sources
2. Check stock records to determine stock surpluses and/or wholesaling requirements	2.1.Procedures for collecting data are established 2.2.Information is collected and documented 2.3.Collected information is compared from different sources 2.4.Surpluses are determined in preparation of wholesaling used vehicle stock
3. Wholesale used vehicle stock	3.1.Potential buyers of surplus used vehicle stock requirements are located 3.2.A satisfactory selling/purchase price is negotiated 3.3.Surplus used vehicle stock is wholesaled, ensuring compliance with legislative and/or statutory requirements 3.4.Organisation records are updated to reflect wholesale used vehicle stock holding

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to collation of information on stock surpluses
- communicate ideas and information to negotiate sale of surplus stock
- plan and organise activities for sale of surplus stock
- work with others and in a team by involving team members in identifying surplus stock
- use mathematical ideas and techniques to update records of enterprise vehicle stock
- establish diagnostic processes recommending which vehicles are wholesaled
- use workplace technology related to use of business technology to wholesale surplus stock

## REQUIRED SKILLS AND KNOWLEDGE

### Required knowledge

- communication/negotiation process and pitfalls in face-to-face communication
- workplace records and how to maintain them
- oral communication and English language
- written communication
- researching and comparison/analytical skills

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- maintenance of workplace records
- communicating effectively with others involved in or affected by the work.

#### Context of, and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off-the-job
- The following are required:
  - enterprise vehicle stock records
  - enterprise policies and procedures
  - persons including wholesale buyer
  - a qualified workplace assessor.

#### Method of assessment

- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment, in simulated workplace conditions is acceptable
- Prescribed outcome must be able to be achieved without direct supervision
- Practical assessments:
  - maintain workplace records

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>convey information both orally and in writing, in English</li> <li>prepare reports on used vehicle stock to be wholesaled</li> <li>access, interpret and apply information to assist with determining stock to be wholesaled</li> <li>research records and persons to assist with decision-making process</li> <li>wholesale used motor vehicle stock</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods include:

- oral communication, written communication
- checking records and comparing
- determining requirements

Specific requirements:

- manual and/or computer records

**Workplace health and safety (WHS) requirements**

WHS requirements may include:

- state/territory/industry WHS requirements

**Equipment**

Equipment may include:

- computer hardware/software, calculators and office equipment

RANGE STATEMENT	
<b>Enterprise specific records</b>	Enterprise specific records may include: <ul style="list-style-type: none"><li>• newspapers, magazines, stock records, statutory requirements and industry pricing guides</li></ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• manufacturer/component supplier specifications</li><li>• enterprise operating procedures</li><li>• product manufacturer/component supplier specifications</li><li>• customer requirements</li><li>• industry/workplace codes of practice</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Sales and Parts, Administration and Management
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Sales and Marketing
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## AURSCA3009 Provide vehicle technology information

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to present on-board vehicle technology information and vehicle operational instructions to customers at point of sale. The unit involves gathering information from a wide variety of sources, analysing it, and using it for planning purposes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	Work applies to the automotive vehicle and component sales environment and involves the application of skills and knowledge when explaining on-board vehicle technology to customers.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Obtain and evaluate on-board vehicle technology information	<p>1.1. Vehicle and accessory <i>instructions</i> are located and analysed</p> <p>1.2. Workplace, <i>legislative</i> and <i>workplace health and safety (WHS) requirements</i> relevant to vehicle handover procedures are complied with</p> <p>1.3. <i>Vehicle operating functions and technology</i> are explained to customers</p> <p>1.4. Vehicle operational instructions are read to identify correct operating procedures</p> <p>1.5. Vehicle type and model instruction information is regularly reviewed and updated for customers</p> <p>1.6. Vehicle information is assessed for its validity and reliability</p> <p>1.7. Difficult to understand or inadequate operating instructions are simplified for customers</p>
2. Communicate to customers	<p>2.1. Vehicle technologies are <i>communicated</i> to customers according to <i>dealership policies and procedures</i></p> <p>2.2. Customer technology information is presented in a professional manner in line with dealership policy</p> <p>2.3. Communications to customer regarding vehicle operating instructions are summarised so that they convey key points in a clear, concise manner in line with workplace procedures</p>
3. Record vehicle handover information	<p>3.1. Customer handover information is recorded according to workplace policy</p> <p>3.2. Information is recorded and stored using workplace systems and procedures</p>
4. Recommend and implement improvements to vehicle handover	<p>4.1. Feedback is sought on vehicle handover techniques and improvements are evaluated and recommended</p> <p>4.2. Vehicle handover strategies are maximised for customer service and repeat business</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - convey information in vehicle manuals and operational specification sheets
  - provide verbal instructions
- initiative and enterprise skills to adapt vehicle technology information for customers
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to read and follow information in written instructions, specifications, operating procedures, charts and other reference documents, such as owner's manuals and instruction manuals
- numeracy skills to interpret vehicle operating instrument settings
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - plan vehicle handover in line with workplace processes and customer activities
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - recognise a customer problem or potential problem and take action
  - refer problems to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate customer communication procedures
  - recognise own limitations and seek advice
- teamwork skills to work with diverse individuals and groups
- technology skills to use IT to collect vehicle technology data and customer information

#### Required knowledge

- product knowledge
- processes for maintaining customer databases
- procedures for dealing with customers
- vehicle specification sheets
- legislative and statutory requirements relating to:
  - WHS
  - consumer law
  - fair trading legislation
  - industry codes of practice



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- maintain relevant knowledge of vehicle technology information systems for customer needs
- instruct customers in correct operation of vehicle technology
- maintain a professional image with customers
- identify and implement strategies for delivering vehicle technology information to different customer demographic groups.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- a workplace or simulated workplace
- a range of vehicles
- workplace customer handover policies and procedures
- vehicle owner's manuals with vehicle information relating to make, model and customer needs
- vehicle technology specification instructions

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• vehicle illustrations and drawings</li><li>• original equipment manufacturer (OEM) instructions</li><li>• a range of customers with different requirements and demographics</li><li>• legislation and codes of practice</li><li>• computer.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• vehicle owner's manuals</li> <li>• vehicle accessories instruction manuals</li> <li>• vehicle technology specification instructions</li> <li>• vehicle manufacturer websites and handbooks</li> <li>• vehicle instrument illustrations and drawings</li> <li>• OEM instructions.</li> </ul>
<b><i>Legislative requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• customer relations</li> <li>• workplace agreements</li> <li>• privacy Act</li> <li>• duty of care</li> <li>• employee relations</li> <li>• environment protection</li> <li>• industrial relations</li> <li>• industry codes of practice.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace safety policies and procedures</li> <li>• personal protective equipment and clothing</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control and elimination, including of hazardous materials and substances</li> <li>• state and territory WHS legislation.</li> </ul>
<b><i>Vehicle operating functions and technology</i></b> may include:	<ul style="list-style-type: none"> <li>• entertainment systems</li> <li>• navigation systems</li> <li>• blue tooth systems</li> <li>• keyless entry</li> <li>• interior adjustment systems</li> <li>• basic maintenance requirements</li> <li>• spare wheel replacement procedure</li> <li>• warning lights</li> <li>• vehicle safety cameras</li> <li>• park assist systems</li> <li>• climate control system</li> <li>• passenger safety systems</li> </ul>

**RANGE STATEMENT**

<i>Communication</i> may involve:	<ul style="list-style-type: none"><li>• email</li><li>• Facebook</li><li>• face-to-face in vehicle</li><li>• surveys</li><li>• telephone</li><li>• Twitter</li><li>• written and verbal.</li></ul>
<i>Dealership policies and procedures</i> may include:	<ul style="list-style-type: none"><li>• workplace operational policies and procedures</li><li>• workplace customer service policy</li><li>• vehicle handbook and operating instructions</li><li>• legislative and regulatory requirements</li><li>• industry codes of practice</li><li>• customer handover procedures.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Sales and Parts, Administration and Management
<b>Unit sector</b>	Sales and Marketing

**Custom Content Section**

Not applicable.

## AURSCA3010 Appraise and purchase used motor vehicles to supplement stock for sale

### Modification History

Release	Comment
Release 1	<p>Replaces AURS344330A Inspect, appraise and purchase used motor vehicles to supplement stock for sale</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the competence required to inspect and appraise used motor vehicles against perceived needs and pricing guides in preparation to purchase used motor vehicles. It also identifies the competence required to negotiate and purchase used motor vehicle stock.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• Administration/sales vehicle sales</li></ul>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Carry out vehicle inspections	1.1.Vehicles are inspected and appraised as necessary 1.2.Collected information is used to compare appraised vehicles against pricing guides
2. Value used motor vehicles	2.1.Collected information is used to value vehicle 2.2.Vehicle is valued using organisation records in readiness to make buying offer 2.3.Issues/concerns are discussed with experienced staff
3. Negotiate used motor vehicles purchase price	3.1.Discuss appraisal with vehicle owner 3.2.Negotiate a satisfactory purchase price using collected information/details
4. Purchase used motor vehicles	4.1.Purchase used motor vehicles within budget 4.2.Comply with legislation and/or statutory requirements during the purchase process 4.3.Update organisation records to reflect purchased used motor vehicles

## Required Skills and Knowledge

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
This section describes the skills and knowledge required for this unit.
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• collate information regarding vehicle appraisal</li> <li>• explain appraisal to the owner</li> <li>• plan appraisal and purchase of motor vehicle</li> <li>• experienced staff are consulted when issues arise with appraisal</li> <li>• purchases are completed within budget</li> <li>• price is negotiated with owner</li> <li>• use business technology to identify market prices</li> </ul>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• market values and factors affecting used vehicle valuation</li> <li>• industry records and how to maintain them</li> <li>• vehicle inspection methods</li> <li>• industry pricing guides</li> </ul>

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• vehicle supply/demand</li><li>• basic operating principles of motor vehicle systems/ components including types and models of vehicles</li><li>• used vehicle appraisal process</li><li>• negotiating skills and techniques</li><li>• industry legislation and paperwork requirements</li><li>• vehicle purchasing skills</li><li>• company stock policy</li></ul>

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• inspecting vehicles to determine a purchase price</li> <li>• comparing determined information</li> <li>• negotiating skills</li> <li>• buying skills.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• Underpinning knowledge and skills may be assessed on or off-the-job</li> <li>• The following should be made available: <ul style="list-style-type: none"> <li>• enterprise specific records, industry pricing guides, newspapers, magazines, stock records, statutory requirements</li> <li>• business technology, computers/calculators</li> <li>• a qualified workplace assessor.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment, in simulated workplace conditions is acceptable</li> <li>• Practical assessments: <ul style="list-style-type: none"> <li>• maintain industry records</li> <li>• access, interpret and apply technical information</li> <li>• compare appraisals with pricing guides and value used vehicles</li> <li>• carry out used vehicle inspections and appraisals</li> </ul> </li> <li>• The prescribed outcome must be able to be achieved without direct supervision</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>physically checking/inspecting vehicles, recording results, checking against price guides</li> <li>negotiating purchase prices, completing paperwork, carrying out vehicle security register checks and purchasing vehicles</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements may include:</p> <ul style="list-style-type: none"> <li>manual and/or computer records</li> <li>knowledge of operating principles of vehicle systems and/or components</li> <li>knowledge of market trends and vehicle selling prices</li> </ul>
<b>Workplace health and safety (WHS) requirements</b>	<p>WHS requirements may include:</p> <ul style="list-style-type: none"> <li>state/territory WHS legislation</li> <li>award provisions</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>manufacturer/component supplier specifications</li> <li>enterprise operating procedures</li> <li>customer requirements</li> <li>industry/workplace codes of practice</li> </ul>

## Unit Sector(s)

Unit sector	Sales and Parts, Administration and Management
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Sales and Marketing
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## AURSCP2001 Provide information to customers on automotive refinishing products

### Modification History

Release	Comment
Release 1	Replaces AURS238154A Provide information to customers on automotive refinishing products Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit of competency covers the competence to provide basic information to customers on automotive refinishing products, including information on surface preparation, fillers, coatings and polishes.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and interpret information on refinishing products	1.1. Information on automotive refinishing products and their applications and limitations is accessed, interpreted and conveyed to other staff members 1.2. Comparisons between products are researched and applied, including brand options, product features, warranties and price
2. Identify customer requirements	2.1. Customer is made to feel welcome and valued 2.2. Questioning techniques are applied to determine nature of customer enquiry 2.3. Available information relating to customer requirements is gathered, documented and confirmed with customer
3. Provide information to customers on refinishing products	3.1. Refinishing products are evaluated according to customer requirements 3.2. Information on applicable products satisfying customer requirements is provided 3.3. Features, benefits, limitations and safety implications of products and techniques for applying products are demonstrated or explained to the customer to create a buying environment 3.4. Advice is sought from product specialist 3.5. Customer is advised to seek specialist advice where warranted

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to:
- questioning and active listening skills, for example when eliciting information from customers about products and services required
- plain English literacy and communication skills in relation to dealing with customers and providers/suppliers and recording information
- communicate ideas and information to provide customer with information about applicable products

## REQUIRED SKILLS AND KNOWLEDGE

- plan and organise activities to plan product presentations
- work with others and in a team by involving product specialists
- use mathematical ideas and techniques with numerical skills sufficient to estimate and calculate costs to pricing products
- establish diagnostic processes which evaluate different products for different needs
- use workplace technology related to technical skills to use a range of communication and electronic equipment

### Required knowledge

- general knowledge of enterprise/industry manuals and documentation (paper-based and computerised)
- broad operational knowledge of legislation and statutory requirements, including workplace health and safety (WHS) and customer safety
- broad operational knowledge of industry codes of practice, including scanning code
- general refinishing product knowledge including:
  - automotive coatings
  - fillers
  - anti-rust material
  - abrasives and buffers
  - polishes and polishing material
  - cleaning materials
- general knowledge of automotive refinishing techniques including:
  - repair of minor dents
  - treatment of rust
  - selection and application of fillers
  - surface preparation, including application of primers, guide
  - coats and finishing putties
  - application of top coats and clear coats
  - buffing
  - colour matching
- detailed knowledge of enterprise:
  - product and merchandise range
  - service range
  - procedures for taking customer orders
  - buying, pricing and ordering procedures
  - other policies and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- consistently applying store policies and procedures and industry codes of practice regarding customer service and selling materials and products
- accessing, interpreting and conveying knowledge of refinishing products to customers
- applying knowledge of refinishing products to provide accurate advice according to needs of the customer
- communicating effectively with others involved in or affected by the work.

#### Context of, and specific resources for assessment

- This unit may be assessed in conjunction with other units forming part of the job role or function
- The following are required:
  - a workplace or simulated workplace
  - range of products and merchandise (real and simulated)
  - documentation, such as inventory lists, price lists, enterprise policy and procedures manuals, delivery costs, and details of services available
  - a range of customers with different requirements (real or simulated)
  - a range of communication equipment
  - a qualified workplace assessor.

#### Method of assessment

- It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons, subject to agreed authentication arrangements
- Elements of competence contain knowledge and practical components. Knowledge components may be assessed off the job. Practical components should be assessed on the job or in a simulated work environment reflecting a range of products and services and a range of customers with

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	<p>different requirements</p> <ul style="list-style-type: none"> <li>• Evidence is best gathered using products and procedures of the individual workplace context as the means by which candidate achieves industry competencies</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Refinishing products</b>	<p>Refinishing products may include:</p> <ul style="list-style-type: none"> <li>• products and materials used for preparing automotive surfaces and applying coatings, fillers, anti-rust material and polish, and for conducting colour matching</li> </ul>
<b>Product application techniques</b>	<p>Product application techniques may include:</p> <ul style="list-style-type: none"> <li>• techniques for repair of minor dents, treatment of rust, selection and application of fillers, surface preparation, application of primers, guide coats and finishing putties, application of top coats and clear coats, buffing and colour matching</li> </ul>
<b>Specialist advice</b>	<p>Situations where customer may require advice from specialist automotive refinishers may :</p> <ul style="list-style-type: none"> <li>• structural damage, damage in awkward or difficult locations, specialty finishes or where experience of the customer is limited</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Enterprise</b>	Enterprises may vary in size, type and location and in range of merchandise and services provided
<b>Customers</b>	Customers may be regular or new and may have routine or special requests. They may include persons from a range of social, cultural or ethnic backgrounds and physical and intellectual abilities and may have special needs. Regardless, customers are made feel welcome, valued and, at end of the process, satisfied
<b>Staff</b>	Staff may be full-time, part-time or casual and vary in terms of staff training and in specialist knowledge of products and services. Staff may be operating in routine or busy trading conditions
<b>Legislative requirements</b>	Legislative requirements may include: <ul style="list-style-type: none"> <li>• state/territory legislation related to WHS and consumer law</li> <li>• industry codes of practice, including scanning code</li> </ul>
<b>Resources may include:</b>	Resources may include: <ul style="list-style-type: none"> <li>• range of products and merchandise (real and simulated)</li> <li>• documentation, such as inventory lists, price lists, enterprise policy and procedures manuals, delivery costs, details of services available</li> <li>• a range of customers with different requirements (real or simulated)</li> <li>• a range of communication equipment</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• enterprise policies and procedures, product manufacturer/component supplier specifications, customer requirements and industry/enterprise codes of practice</li> </ul>

## Unit Sector(s)

Unit sector	Sales and Parts, Administration and Management
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Sales and Marketing - Paint
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## AURSLA2001 Apply legal requirements relating to product sale

### Modification History

Release	Comment
Release 1	Replaces AURS241803A Apply legal requirements relating to product sales Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the competence required to access, interpret and apply legal requirements relating to sale of products.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competence applies to the following and should be contextualised to the qualification it is being applied:</p> <ul style="list-style-type: none"><li>• retail, service and repair - administration/sales product sales.</li></ul>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify legislation and documentation to sell product(s)	1.1.Legislation to sell product(s) is correctly identified and accessed where necessary 1.2.Product documentation and manuals are identified and available for customers
2. Apply legislation to sell product(s)	2.1.Product(s) are sold in accordance with identified legal requirements, including duty of care 2.2.Customer transaction is handled in accordance with consumer legislation
3. Record necessary information on product sales documentation	3.1.Correct product sales documentation is identified and accessed in accordance with enterprise policies and procedures 3.2.Required information is clearly and accurately provided to complete legal requirements for correct documentation 3.3.Customer is requested to sign acknowledgement of information provided, such as operation instructions for product, safety requirements and supply of manual for product

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to legislative requirements
- communicate ideas and information to explain safety and operation issues for products
- plan and organise activities to demonstrate safe operation of products
- work with others and in a team by consulting with experienced staff
- use mathematical ideas and techniques to have cost and time limitations included in demonstrations
- establish diagnostic processes recommending safe operating procedures
- use workplace technology related to the demonstration of safe operation of products

#### Required knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

- product sales legislation
- enterprise sales documentation procedures and policies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- identifying and correctly interpreting legal requirements for product sales
- application of legal requirements to product sales
- correctly completing required documentation to record sale
- communicating effectively with others involved in or affected by the work.

##### Context of, and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job
- The following are required:
  - documentation to fulfil legal requirements and enterprise policies
  - product manuals
  - a qualified workplace assessor.

##### Method of assessment

- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment in simulated workplace conditions is acceptable
- Prescribed outcome must be able to be achieved without direct supervision
- Practical assessments:
  - access, interpret and apply legal requirements to sale of products
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

##### Guidance information for assessment

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>customer contact skills</li> <li>identifying and adhering to legal requirements</li> <li>operation of products and safety requirements explained to and verified by the customer</li> <li>customer acknowledgement of user manuals provided</li> </ul>
<b>Workplace health and safety (WHS) requirements</b>	<p>WHS requirements may include:</p> <ul style="list-style-type: none"> <li>state/territory/industry WHS requirements</li> <li>duty of care</li> </ul>
<b>Resources</b>	<p>Resources may include:</p> <ul style="list-style-type: none"> <li>documentation to fulfil legal requirements and enterprise policies</li> <li>manuals, stationery</li> <li>copies of legislation</li> <li>product for sale</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>manufacturer/component supplier specifications</li> <li>enterprise operating procedures</li> <li>product manufacturer/component supplier specifications</li> <li>customer requirements</li> <li>industry/workplace codes of practice</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Sales and Parts, Administration and Management
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Regulator or Legal
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## AURTEA4001 Manage environmental compliance in the mechanical repair industry

### Modification History

Release	Comment
Release 1	<p>Replaces AURT471782A Plan and manage compliance with environmental regulations in the mechanical repair industry</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to plan and implement a management system ensuring the protection of the environment in a mechanical repair business.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Mechanical workplace or business undertaking either general or specialist mechanical repairs to light or heavy vehicles or their mechanical components, motorcycles or outdoor power equipment. Specialised mechanical repairs may include transmissions, steering and suspension, brakes, engine reconditioning, diesel fuelled plant, exhausts and radiators.</p> <p>This unit is applicable to mechanical repairs involving the removal of components containing oils or other fluids. Other mechanical qualifications should use AURAEA4004 Manage environmental compliance in an automotive workplace.</p> <p>Work involves the planning or management of normal activities in a mechanical or mechanical specialist workplace or business, including service, removal, repair or fitting of mechanical components for light vehicles, heavy vehicles, motorcycles, plant and outdoor power equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills to improve environmental performance by reducing environmental risk and waste.</p> <p>This unit is applicable to mechanical qualifications at both the Certificate IV and V level.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and manage compliance with environmental regulations	<p>1.1.Reasons for ethical environmental practice in an automotive workplace or business are identified.</p> <p>1.2.Environmental responsibilities of employers and staff in an automotive workplace or business are identified.</p> <p>1.3.Penalties for company and individual breaches of the legislation are identified.</p> <p>1.4.Waste products are minimised and facilities provided for waste materials to be stored in bins for recycling or disposal.</p> <p>1.5.Collection and recycling arrangements are implemented for liquids, sludge, solids and other waste.</p> <p>1.6.Suppliers with minimal excess packaging on goods received are sourced.</p> <p>1.7.Packaging on goods received is sorted and disposed of appropriately.</p> <p>1.8.Waste and energy conservation strategies are identified and implemented strategies are identified and implemented.</p>
2. Manage potential hazards to stormwater systems to avoid contamination	<p>2.1.Systems are in place to ensure waste water does not enter the stormwater system.</p> <p>2.2.All drains and flows are identified on a site map directly indicating where they flow.</p> <p>2.3.Appropriate trade waste permits are in place.</p> <p>2.4.Impervious paved, undercover and bunded or drained areas are provided and used for surface cleaning and preparation.</p> <p>2.5.Undercover and bunded or drained areas are provided and used for the storage of all materials, parts and components containing environmentally hazardous substances.</p> <p>2.6.Clearly identifiable storage or recycling containers are provided for all liquid wastes.</p> <p>2.7.Oil/water separator and pits are cleaned and maintained regularly as per manufacturer/component supplier specifications.</p> <p>2.8.Approved parts washer is supplied and maintained in a manner ensuring no contamination occurs.</p> <p>2.9.Spill kit is provided and used as needed to prevent</p>

ELEMENT	PERFORMANCE CRITERIA
	stormwater contamination by staff trained in its use. 2.10. Workplace is kept clean to prevent unintentional stormwater pollution.
3. Manage potential hazards to air quality to avoid contamination	3.1. Hazards to airborne particles are identified, minimised and contained. 3.2. Hazards to gases and fumes are identified, minimised and contained. 3.3. Systems are in place and implemented to ensure vehicle exhausts and emissions are minimised are not permitted to collect in the workplace. 3.4. A well-ventilated area is provided for welding activities.
4. Minimisation of noise hazards is planned and managed	4.1. Noise creating activities are minimised and carried out within approved operating hours. 4.2. Fixed machinery is fitted with silencers or surrounded by noise containment material.
5. Management systems	5.1. An environmental policy and contingency plan suitable to the needs of the business is developed and implemented. 5.2. Waste to landfill is calculated and possible savings through reuse and recycling are calculated. 5.3. Payback period on environmental equipment is calculated. 5.4. Staff adherence to environmental responsibilities is managed. 5.5. Environmental records are accurately and legibly maintained and stored securely in a form accessible for reporting procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to environmental procedures from legislation, regulations, policies, guidelines, standards and workplace best practices in an automotive mechanical business

## REQUIRED SKILLS AND KNOWLEDGE

- communicate ideas and information to enable work undertaken is in accordance with environmental best practice
- seek support from stakeholders for implementing suitable innovation and continuous improvement
- plan and organise activities, including preparation of equipment and materials recycling and waste management systems and selection of worksite to avoid environmental contamination, backtracking, workflow interruptions or wastage
- promote work with others and in a team by recognising dependencies and using cooperative approaches to minimise wastage, optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work and calculate wastage rates of various methods
- use planning, checking and inspection techniques to avoid environmental contamination and wastage
- use the workplace technology related to environmental protection and recycling equipment

## Required knowledge

- relevant aspects of environmental legislation and its relationship with WHS, and financial and risk management
- requirements for trade waste permits
- spill cleanup procedures
- characteristics and potential environmental impact of products used in the business
- philosophy of sustainability through prevention, reuse, reduce and recycle
- procedures for rectifying machinery faults and material defects
- action to be taken in case of significant environmental threat in the workplace
- reporting procedures for significant environmental damage occurring in the workplace
- cleaner production and eco-efficient strategies to avoid the production of waste

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Plan and manage safe handling requirements for equipment, products and materials, including use of personal protective equipment.
- Plan and manage environmental protection procedures in the business.
- Identify materials used in process in the business, and assess and manage their environmental impact.
- Ensure effective recycling processes are in place.
- Plan and manage work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others,
  - maintain a clean workplace,
  - prevent wastage and damage to goods, equipment and products,
  - dispose of waste in accordance with legislative requirements and best practice,
  - maintain required production output and product quality.
- Report significant environmental damage or spills.
- Plan and manage operator maintenance on equipment to ensure environmental efficiency.
- Manage effective planning and team work related to environmental best practice.
- Develop/implement or audit an existing business environmental policy covering, at a minimum: waste, recycling, hazards to stormwater, air quality, noise, energy minimisation and costs.
- Modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to an automotive mechanical workplace or business with a range of vehicles or mechanical components, waste materials of various types, recycling

## EVIDENCE GUIDE

	bins, spill kits, quick break degreasing agents, oil/water separator for liquids, sludge, solids and other waste.
<b>Method of assessment</b>	<p>Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</p> <p>Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</p> <p>Assessment should be conducted over time and should be in conjunction with assessment of other units of competence.</p> <p>Assessment of this unit of competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a component authority.</p> <p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Unit context

- Work is carried out in accordance with legislative obligations, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.
- Competence may be demonstrated in any mechanical workplace or business

#### WHS

WHS requirements include legislation, material safety data sheets, hazardous substances and dangerous goods code and safe operating procedures

#### Tooling and equipment

- Tooling and equipment are to include spill kits, recycling bins and drums, banded or drained wash bays and preparation areas, parts washers, quick break degreasing compounds, waste water management system.
- Tooling and equipment may include containment facilities for hazardous substances and staff environmental induction materials.

#### Materials

Materials may include:

- material safety data sheets, manufacturer/component supplier specifications, environmental records, costing of equipment and waste removal
- containment facilities for hazardous substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.

#### Information and procedures

Information and procedures may include:

- environmental legislation, regulations and advice
- workplace procedures relating to the use of

## RANGE STATEMENT

	<ul style="list-style-type: none"><li>tooling and equipment</li><li>• work instructions and procedures</li><li>• site environmental policy</li><li>• workplace procedures relating to reporting and communication</li><li>• manufacturer/component supplier specifications and operational procedures</li><li>• local council and waterways regulations</li></ul>
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## Unit Sector(s)

Unit sector	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Environment
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## AURTGA3001 Drive and manoeuvre trailers

### Modification History

Release	Comment
Release 1	Replaces AURT337119A Drive and manoeuvre trailer(s) Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence required to drive and manoeuvre trailer(s).  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, safe driving, manoeuvring and parking of trailer(s), disconnecting trailer(s) from vehicle and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to:</p> <ul style="list-style-type: none"><li>• safe driving, manoeuvring and parking of trailers</li><li>• trailer with non-pivoting axle</li><li>• trailer with pivoting front axle</li><li>• vehicle with towing hitch.</li></ul> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including personal safety needs, are observed throughout the work 1.3. Equipment and tooling are identified and checked for safe and effective operation 1.4. Procedures are determined to minimise task time
2. Perform a preliminary safety check	2.1. Safety checks are completed without causing damage to trailer or components 2.2. Vehicle and coupling set-up are selected 2.3. Safe condition of towing vehicle is determined 2.4. Security of trailer load is ensured 2.5. Activities are carried out according to industry regulations/guidelines, WHS, environmental and legislation and enterprise policies/procedures
3. Connect trailer to vehicle	3.1. Vehicle to trailer alignment is achieved 3.2. Techniques are used for manual handling of trailer 3.3. Trailer is hitched to vehicle and ancillaries are connected 3.4. Connections are tested and checked 3.5. Activities are carried out according to industry regulations/guidelines, WHS, environmental and legislation and enterprise policies/procedures
4. Drive and manoeuvre trailer	4.1. Brake lockout devices are set correctly 4.2. Techniques are used to safely manoeuvre trailer and vehicle in forward and reverse directions and perform parking functions 4.3. Activities are carried out according to industry regulations/guidelines, WHS, environmental and legislation and enterprise policies/procedures
5. Disconnect trailer from vehicle	5.1. Parking devices are applied 5.2. Techniques are used for manual handling of trailer 5.3. Ancillary devices are disconnected and trailer is unhitched 5.4. Activities are carried out according to industry regulations/guidelines, WHS, environmental and legislation and enterprise policies/procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for driving and manoeuvre of trailers:
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the documenting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information trailer hitching and manoeuvre techniques
- plan and organise activities, including the preparation and layout of worksite and the obtaining of equipment and materials to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete tests and measurements to determine trailer load security, trailer hitching and driving
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform trailer driving/manoeuvring
- problem-solving skills for a range of differing procedural issues
- use the workplace technology related to:
  - trailer safety inspection
  - trailer hitching and load security
  - trailer driving, manoeuvring and parking

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- different trailer types
- State/Territory regulations for towing trailers
- manufacturer/enterprise policies

**REQUIRED SKILLS AND KNOWLEDGE**

- loading of trailers and travelling with a loaded trailer
- trailer hitching systems
- driving and manoeuvring techniques
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle and trailer protection requirements
- manoeuvring a minimum of two different types of trailers in restricted and non-restricted environments without damage to vehicle, trailer or surroundings

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- suitable area for trailer driving, manoeuvring and parking
- material relevant to driving and manoeuvring of trailers
- equipment and tooling appropriate to driving and manoeuvring of trailers
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include:

- safety inspection
- trailer hitching to vehicle and ancillary connections
- securing load
- trailer driving, manoeuvring and parking
- trailer unhitching

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

**Personal protective equipment**

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

**Safe operating procedures**

Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors

**Emergency procedures**

Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions and plans or instructions related to job/task
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written instructions, signage, work schedules/plans/ specifications</li><li>• safe work procedures related to driving and manoeuvring of trailers</li><li>• regulatory/legislative requirements pertaining to driving and manoeuvring of trailers</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	
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## AURTNA5001 Estimate and calculate costs to repair, maintain or modify a vehicle

### Modification History

Release	Comment
Release 1	<p>Replaces AURT577727B Estimate and calculate costs to repair, maintain or modify a vehicle</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to estimate and calculate the costs to repair, maintain or modify a vehicle taking into account materials, labour and overhead costs.</p> <p>It requires the ability to estimate and calculate costs, analyse information, and report and document the costs.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who estimate and calculate the cost to repair, maintain or modify a vehicle in the vehicle repair and vehicle loss assessing industries. This calculation would normally be undertaken by the owner of the business as it incorporates materials, labour and overhead costs. Vehicles may include light vehicles, heavy vehicles, agricultural and plant equipment, recreational boats, recreational vehicles and motorcycles.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information	1.1. Clarify the particular service required 1.2. Obtain and analyse details of the proposed service requirements 1.3. Obtain labour unit cost projections 1.4. Obtain and analyse logistic support contracts, supply agreements or equivalent 1.5. Obtain details of any proposed warehousing and physical distribution systems and related cost factors 1.6. Document and store information ready for retrieval and application
2. Estimate materials and labour	2.1. Estimate cost of repair time 2.2. Estimate labour requirements for direct services and related operations 2.3. Estimate cost of subcontractor work 2.4. Estimate type and cost of parts and materials according to industry and enterprise pricing standards 2.5. Document final estimate
3. Determine and calculate overheads	3.1. Determine components contributing to overhead costs 3.2. Calculate overhead costs to be attributed to the work in accordance with commercial and enterprise procedures
4. Calculate costs	4.1. Cost repair time in accordance with enterprise procedures 4.2. Cost direct labour costs and subcontractor work 4.3. Cost parts and materials 4.4. Calculate total job cost, including overheads and mark-up percentages in accordance with enterprise procedures 4.5. Calculate total service cost 4.6. Note potential quotation variations 4.7. Record cost calculations
5. Document and verify details	5.1. Document details of costs and charges in accordance with enterprise procedures 5.2. Verify costs, calculations and other details with relevant enterprise person 5.3. Document and file details for future reference and in

ELEMENT	PERFORMANCE CRITERIA
	accordance with enterprise procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use internet and other workplace technology related to calculating work costs
- communication skills to the level required to verify costs with others, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to undertake costing research, and to document and report findings
- numeracy skills to the level required to estimate and calculate labour, materials and on-costs and to validate work costs
- problem-solving skills to the level required to anticipate costing problems and to avoid reworking, wastage, and planning and scheduling problems
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- methods and processes for identifying, apportioning, summarising and validating total costs for work
- components of labour costs
- current assessing and quoting methodologies
- commercial approaches to warehousing and physical distribution and costing
- manufacturer and component supplier specifications and manuals, including costing catalogues
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including workplace health and safety (WHS), personal safety and environment, relevant to calculating vehicle repair, maintenance and modification costs
- organisational policies and procedures, including quality requirements, reporting and recording procedures, related to calculating vehicle repair, maintenance and

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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modification costs
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## Evidence Guide

<b>EVIDENCE GUIDE</b>
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The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.
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**EVIDENCE GUIDE****Critical aspects of evidence**

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select appropriate methods and techniques
- interpret proposals, specifications and instructions for the work
- obtain information relevant to the determination of costs
- calculate and cost accurately the quantities of parts and materials, the amount of labour and time required to complete the work, and overheads for a range of vehicle repair, maintenance and modification quotes
- document the process and outcomes in accordance with enterprise practice.

**Context of assessment**

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - vehicles requiring repair that can be used for quotations
  - appropriate worksite and costing details
  - manufacturer and component costs, labour rates, commercial and industry information
  - Repair Times manuals
  - equipment, including calculators, computer and software
  - internet access
  - enterprise procedures.

**Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Specific resource requirements for this unit</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Service requirements**

Service requirements may include:

- specialised work
- subcontracting
- replacement parts
- repair timeframe

**Overhead costs**

Overhead costs may include:

- rental and leasing costs
- utilities

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• non-production resources</li> <li>• depreciation of plant and equipment</li> <li>• warehousing margins</li> <li>• warehousing costs</li> <li>• insurance and other costs incurred by doing business</li> <li>• material/supply costs, including catalogues, contracts, standing agreements, market rates and warehousing margins</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• Motor Vehicle Insurance and Repair Industry Code of Conduct</li> <li>• verbal, written and graphical instructions</li> <li>• parts listing prices and catalogues</li> <li>• inventory systems</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures for inspection of vehicles for saleable components</li> <li>• engineer's design specifications and instructions</li> <li>• workplace specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> <li>• current driver's licence</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• duty of care</li> </ul>

**RANGE STATEMENT****WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures
- road rules
- safe driving policy

**Environmental requirements**

Environmental requirements may include:

- waste management
- noise
- dust
- clean-up management

**Organisational policies and procedures**

Organisational policies and procedures may include:

- financial management
- cost and apportioning overheads
- labour employment costs, including awards and contracts
- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

## Unit Sector(s)

Unit sector	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Loss Assessment or Repair Quoting
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## AURTTA1001 Remove and tag steering, suspension and brake system components

### Modification History

Release	Comment
Release 1	Replaces AURT100164A Remove and tag steering, suspension and brake system components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor
Release 2	Minor typographical errors corrected

### Unit Descriptor

Unit descriptor	This unit covers the competence to remove and tag steering, suspension and brake system components. Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	Work involved includes steering, suspension and brake systems on light vehicles, motorcycles, heavy vehicles road transport, heavy vehicles mobile plant and outdoor power equipment. Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove and tag steering, suspension and brake system components	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Dangers associated working with the removal and tagging of steering, suspension and brake components are observed</p>
2. Remove steering, suspension and brake system components	<p>2.1.Steering, suspension and brake system components for removal are identified</p> <p>2.2.Methods for the removal and tagging are implemented in accordance with manufacturer/component supplier specifications</p> <p>2.3.Components are removed without damage</p> <p>2.4.Inspection of components is carried out</p> <p>2.5.Report is processed in accordance with workplace procedures</p>
3. Tag steering, suspension and brake system components	<p>3.1.Tagging procedures are identified</p> <p>3.2.Resource requirements for tagging are identified and support equipment is identified and prepared</p> <p>3.3.Components are tagged without damage</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removing and tagging steering, suspension and brake components, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- Steering, suspension and brake system terminology
- function of each component
- relationship of components to each other
- application of components
- removal procedures
- tagging procedures
- quality procedures

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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- |   |
|---|
| <ul style="list-style-type: none"><li>• organisation and planning processes</li></ul> |
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## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• identifying, removing and tagging a range of components by their title and application</li> <li>• conducting the removal and tagging without damage to components or tooling and equipment.</li> </ul>
<b>Context of and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• Application of competence is to be assessed in the workplace or simulated worksite</li> <li>• Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</li> <li>• Assessment is to comply with regulatory requirements, including Australian Standards</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</li> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to removing and tagging steering, suspension and brake components</li> <li>• equipment and hand and power tooling appropriate to removing and tagging steering, suspension and brake components</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul> </li> </ul>

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**System components**

- System components include steering linkages, tie rod ends, "I" beam axle, independent suspension, ball joints, leading and trailing shoe, duo servo and disc braking
- Tagging is to be by title and application

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling and hand-held power tooling

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include tags and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information and procedures</b>	<p>Information and procedures may include:</p> <ul style="list-style-type: none"> <li>• enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets and Australian Design Rules</li> <li>• safe work procedures related to removing and tagging of steering, suspension and brake system components</li> <li>• organisation work specifications and requirements</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURTTA1002 Carry out workshop practice activities

### Modification History

Release	Comment
Release 1	Replaces AURT100308A Carry out workshop practice activities Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out workshop practice activities, including general fitting, housekeeping, component cleaning, documenting and reporting skills.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work involved includes all vehicle repair workshops.</p> <p>Work requires individuals to demonstrate some limited judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to undertake workshop practice</b>	<ul style="list-style-type: none"><li>1.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.2.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</li><li>1.3.Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.4.Technical requirements for workshop practice are sourced and support equipment is identified and prepared</li><li>1.5.Warnings in relation to working within a workshop environment are observed</li></ul>
2. <b>Workshop practice is carried out</b>	<ul style="list-style-type: none"><li>2.1.Methods for the workshop practice are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</li><li>2.2.Observations are noted during the procedure</li><li>2.3.Workshop practice scheduled documentation is completed</li><li>2.4.Final inspection is made to ensure work is to workplace expectations</li><li>2.5.Report is completed and delivered to persons</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques such as number and space techniques, estimation and approximation for practical purposes
- use workplace technology to combine physical and sensory skills needed to operate equipment with understanding of scientific and technological principles needed to explore and adapt systems

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with workshop equipment
- operating principles of machines and equipment and their relationship to each other
- fitting procedures
- workshop procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• conducting the workplace practice in accordance with workplace requirements</li> <li>• accurately interpreting workshop practice requirements</li> <li>• applying fitting skills to manufacturer/component supplier requirements</li> <li>• completing activities within workplace timeframes</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to carrying out workshop practice activities</li> <li>• equipment, hand and power tooling appropriate to carrying out workshop practice activities</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning</p>

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Workshop practice activities**

Workshop practice activities are to include housekeeping, component cleaning, general fitting, reporting and documenting

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and responses associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, gauges, measuring and equipment cleaning devices
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and

RANGE STATEMENT	
	paggers
Information/documents	Sources of information/documents may include: <ul style="list-style-type: none"><li>• enterprise operating procedures</li><li>• job cards</li><li>• workshop manuals</li><li>• supplier data sheets</li><li>• parts catalogues</li><li>• customer orders</li><li>• industry/workplace codes of practice</li><li>• material safety data sheets</li><li>• Australian Design Rules</li></ul>

## Unit Sector(s)

Unit sector	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURTTA1003 Use and maintain basic measuring devices

### Modification History

Release	Comment
Release 1	<p>Replaces AURT125667A Use and maintain basic measuring devices</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to use and maintain measuring equipment used in general repair and of a basic nature.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, conduct of measurements, analysis and documenting of outcomes, maintenance of equipment and the completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes measurement of length, width, squareness, flatness and depth, using imperial and metric measurement.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to undertake measurements</b>	<ul style="list-style-type: none"><li>1.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.2.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</li><li>1.3.Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.4.Technical and/or calibration requirements for measuring equipment are sourced and support equipment is identified and prepared</li><li>1.5.Warnings in relation to working with precision tooling are observed</li><li>1.6.Correct and safe use of the repair equipment is demonstrated prior to work undertaken</li></ul>
2. <b>Conduct measurements and analyse results</b>	<ul style="list-style-type: none"><li>2.1.Methods for the conducting of measurements are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</li><li>2.2.Measurement results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</li><li>2.3.Results are documented with evidence and supporting information and recommendation(s) made</li><li>2.4.Report is processed in accordance with workplace procedures</li></ul>
3. <b>Maintain measuring equipment</b>	<ul style="list-style-type: none"><li>3.1.Information required for maintenance is accessed from manufacturer/component supplier specifications and correctly interpreted</li><li>3.2.Routine maintenance and storage of measuring equipment is carried out in accordance with manufacturer/component supplier specifications</li><li>3.3.Checks are completed without causing damage to component or system</li><li>3.4.Workplace documents are processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- Apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the use and maintenance of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- common automotive measurement terminology
- types of non-specialist measuring equipment and their applications
- measurement procedures
- measuring equipment maintenance procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• measuring dimensions</li> <li>• maintaining measuring equipment</li> <li>• conducting measurement in accordance with workplace requirements</li> <li>• accurately interpreting measurements</li> <li>• completing measurements within workplace timeframes</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the use and maintenance of measuring equipment</li> <li>• equipment, hand and power tooling appropriate to the use and maintenance of measuring equipment</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning</p>

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Measuring equipment</b>	Measuring equipment may include split levels, depth gauges, steel rulers, tape measures, T-squares and straight edges
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data</li> </ul>

**RANGE STATEMENT**

	<p>sheets diagrams or sketches</p> <ul style="list-style-type: none"><li>• safe work procedures related to the use and maintenance of measuring equipment</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines Engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA2004 Carry out servicing operations

### Modification History

Release	Comment
Release 1	Replaces AURT200108A Carry out servicing operations Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out routine and scheduled servicing operations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>It requires identification of servicing requirements, preparation for work, correct handling of lubricants and fluids, completion of servicing and work finalisation processes, including documentation.</p> <p>Work involved includes the routine and scheduled servicing of wheeled and tracked type vehicles and equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to undertake servicing operations</b>	1.1. Work requirements, including the nature and scope of servicing, are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical requirements are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with vehicles and equipment are observed
2. <b>Apply correct lubricants and/or fluids handling techniques</b>	2.1. Correct lubricants/fluids are identified for components as per manufacturer/component supplier specifications 2.2. Fluid leaks are inspected in accordance with manufacturer/component supplier procedures 2.3. Used lubricants/fluids are disposed of in accordance with statutory requirements 2.4. Handling of lubricants/fluids is carried out according to industry regulations/guidelines, WHS legislation and legislation
3. <b>Carry out servicing operations</b>	3.1. Methods for the servicing operations are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2. Minor adjustments made during the servicing operations are in accordance with manufacturer/component supplier specifications
4. <b>Prepare vehicle for use or storage</b>	4.1. Vehicle servicing schedule documentation is completed 4.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3. Final inspection is made to ensure work is to workplace expectations 4.4. Servicing equipment is cleaned for use or storage to workplace expectations

ELEMENT	PERFORMANCE CRITERIA
	4.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to vehicle servicing operations, including the use of diagnostic and specialist tooling and equipment, measuring equipment, computerised technology, and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with vehicles and/or equipment
- operating principles of vehicle systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- workshop procedures
- disposal of lubricants/fluids procedures
- enterprise quality procedures

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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- |  |
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| <ul style="list-style-type: none"><li>• work organisation and planning processes</li></ul> |
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner for a range of servicing requirements:
- accurately interpret the servicing data
- conduct the servicing operations in accordance with workplace and manufacturer/component supplier requirements
- complete the work within workplace timeframes
- present equipment to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to vehicle servicing operations
- equipment, hand and power tooling appropriate to vehicle servicing operations
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

	<p>of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid,

<b>RANGE STATEMENT</b>	
	hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, measuring devices, job cards, hoists, jacks and lubrication equipment
<b>Materials</b>	Materials may include oils and lubricants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or

**RANGE STATEMENT**

	instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to vehicle servicing operations</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA2005 Select and use bearings, seals, gaskets, sealants and adhesives

### Modification History

Release	Comment
Release 1	<p>Replaces AURT200368A Select and use bearings, seals, gaskets, sealants and adhesives</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the selection and use of bearings, seals, gaskets, sealants and adhesives relevant to the vehicle industry.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, installation of bearings, seals, gaskets, use of sealants and adhesives and completion of work finalisation processes, including documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to select and use bearings, seals, gaskets, sealants and adhesives</b>	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical requirements for testing and installation are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with sealants and adhesives are observed</p>
2. <b>Select and use sealants</b>	<p>2.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>2.2.Sealants and adhesives selected are those most appropriate for the work requirement</p> <p>2.3.Sealants and adhesives are used in accordance with manufacturer/component supplier instructions</p> <p>2.4.Sealants and adhesives are stored in accordance with manufacturer/component supplier instructions</p>
3. <b>Prepare to install bearings, seals and gaskets</b>	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information required are identified and sourced</p> <p>3.3.Technical and tool requirements for installation are identified and support equipment is identified and prepared</p>
4. <b>Carry out installation of bearings, seals and gaskets</b>	<p>4.1.Methods for the installation are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>4.2.Adjustments made during the service and/or repair are in accordance with manufacturer/component supplier specifications</p>
5. <b>Prepare vehicle/</b>	5.1.Selection and installation documentation is

ELEMENT	PERFORMANCE CRITERIA
<b>component for use or storage</b>	<p>completed</p> <p>5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations</p> <p>5.4.Equipment is cleaned for use or storage to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to the selection and use of bearings, seals, gaskets, sealants and adhesives, including the use of measuring equipment, specialist tooling and equipment, and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with sealants and adhesives
- operating principles of bearings, seals, gaskets and their relationship to other components
- types, characteristics, uses and limitations of sealants and adhesives
- types and layout of service/repair manuals (hard copy and electronic)
- bearings, seals and gaskets installation procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- sealant and adhesives application techniques
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- selecting and installing the following bearings to workplace and manufacturer/component supplier requirements:
  - plain
  - anti-friction
  - adjusting/pre-loading taper roller bearings
- selecting and using a minimum of three different types of lip seals and 'O' rings to workplace and manufacturer/component supplier requirements
- selecting and applying two different types of gaskets to manufacturer/component supplier requirements
- selecting and applying hardening and non-hardening sealants to manufacturer/component supplier requirements
- selecting and applying a polymer (silicone) adhesives to manufacturer/component supplier requirements
- vehicle/component is presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

<b>EVIDENCE GUIDE</b>	
	<p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the installation of bearings, seals and gaskets</li> <li>• material relevant to the selection and use of sealants and adhesives</li> <li>• equipment, hand and power tooling appropriate to installation of bearings, seals and gaskets</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Bearings</b>	Bearings are to include plain (bushes and bearing inserts) and anti-friction (ball and roller)
<b>Seals</b>	Seals are to include lip, face and 'O' ring (dynamic and static)
<b>Gaskets</b>	Gaskets are to include special papers, cork, and composite material types used for cylinder head (heat and pressure), cooling system and transmission system
<b>Sealants</b>	Sealants are to include hardening and non-hardening types which may be used with another seal (e.g. special papers) or as the only seal
<b>Adhesives</b>	Adhesives are to include polymers (silicone) which may be used for glass (windcreens) engine and transmission components
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation,

<b>RANGE STATEMENT</b>	
	manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, and load testing devices
<b>Materials</b>	Materials may include bearings, seals, gaskets, sealants, adhesives and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the selection and use of bearings, seals, gaskets, sealants and adhesives</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>australian design rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA2006 Service hydraulic systems

### Modification History

Release	Comment
Release 1	Replaces AURT209170A Service hydraulic systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the inspection and servicing of hydraulic systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing of systems, analysis of results and servicing of hydraulic systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves vehicles fitted with hydraulic systems that are of an earthmoving or lifting and supporting nature.</p> <p>This unit is not intended for drive systems, power steering or hydraulic braking systems. See specific unit of competence for these systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to undertake testing and servicing of hydraulic systems</b>	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical requirements for testing and servicing of hydraulic systems are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with hydraulics are observed
<b>2. Test hydraulic systems and analyse results</b>	2.1.Methods for the system tests and implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is processed in accordance with workplace procedures
<b>3. Carry out servicing</b>	3.1.Methods for the service implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2.Adjustments made during the service are in accordance with manufacturer/component supplier specifications
<b>4. Prepare vehicle/system for use or storage</b>	4.1.Servicing schedule documentation completed 4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3.Final inspection is made to ensure work is to workplace expectations 4.4.Vehicle/system is prepared for use or stored to workplace expectations 4.5.Job card is processed in accordance with workplace

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to servicing hydraulic systems, including the use of measuring equipment, diagnostic and specialist tooling and equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with pressurised fluids
- identification of application, purpose and operating principles
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- servicing procedures
- enterprise quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting inspection results
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- completing servicing of hydraulic systems and associated components within workplace timeframes
- vehicle/hydraulic system is presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of hydraulic systems
- equipment, hand and power tooling appropriate to the inspection and servicing of hydraulic systems
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Servicing**

Servicing to include fluids, filters, adjustments and operational testing, visual inspections and documents

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and fluid dispensing, disposal and load testing devices

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to servicing hydraulic systems</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURTTA2007 Inspect, service and repair pneumatic systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT209671A Inspect, service and repair pneumatic systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to inspect, service and repair pneumatic systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis, servicing and repair of pneumatic systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes pneumatic systems that are used in the mining industry to drill or drive ground breaking equipment.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to undertake inspection of pneumatic systems</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and inspection requirements for pneumatic systems are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with pneumatic systems are observed
2. <b>Conduct inspection and analyse results</b>	2.1. Methods for the inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is processed in accordance with workplace procedures
3. <b>Prepare to service and repair pneumatic systems</b>	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information required are identified and sourced 3.3. Technical and tool requirements for the service and repair are identified and support equipment is identified and prepared
4. <b>Carry out service and repair</b>	4.1. Methods for the service and repair are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications 4.2. Adjustments made during the service and repair are in accordance with manufacturer/component supplier specifications

ELEMENT	PERFORMANCE CRITERIA
<b>5. Prepare vehicle/ equipment for use or storage</b>	<p>5.1. Service and repair schedule documentation is completed</p> <p>5.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3. Final inspection is made to ensure work is to workplace expectations</p> <p>5.4. Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>5.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection, servicing and repair of pneumatic systems, including the use of servicing tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with pneumatic systems
- able to read and interpret schematic diagrams relevant to pneumatic systems
- identification of application, purpose and operating principles
- identification of pneumatic system schematic symbols
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• service and repair procedures</li><li>• enterprise quality procedures</li><li>• work organisation and planning processes</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications
- accurately interpreting system test results
- completing the service and repair of pneumatic systems in accordance with workplace and manufacturer/ component supplier requirements
- completing service and repair of the pneumatic systems and associated components within workplace timeframes
- pneumatic system is presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection, servicing and repair of pneumatic systems
- equipment, hand and power tooling relevant to the inspection, servicing and repair of pneumatic systems

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Servicing</b>	Servicing to include fluids, filters, adjustments and operational testing, visual inspections and documents
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load and pressure testing devices
<b>Materials</b>	Materials may include fluids, minor spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to inspection, service and/or repair of pneumatic systems</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURTTA2008 Produce patterns and templates

### Modification History

Release	Comment
Release 1	Replaces AURT225291A Produce patterns and templates Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to produce patterns and templates for production processes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Dimensions of finished patterns or templates are determined	1.1.Customer orders are interpreted to determine required dimensions of finished products 1.2.Size requirements are checked in relation to the production process and finishing capacity of the workplace
2. Plan process	2.1.Material for pattern or template is identified for approximate size and characteristics 2.2.Required instruments and equipment are identified, located and assembled 2.3.Drawings and related specifications are interpreted 2.4.Procedures for using pattern development instruments and tooling are confirmed and equipment is prepared for use
3. Plot dimensions	3.1.Equipment and tooling are used following normal workplace procedures 3.2.Each dimension is measured, exploded and plotted maintaining angles, arcs and curves 3.3.Visual inspection and measurements are used to compare pattern dimensions and shapes with drawings and specifications
4. Complete pattern or template	4.1.Pattern or template is completed ensuring that the pattern indicates completion date and original drawing details. 4.2.Required workplace approval of pattern or template is obtained 4.3.Plans are marked with notations for workplace requirements, including authorship, process or customer requirements, authorisation and review dates 4.4.Plans are copied and filed according to workplace policies and procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

**REQUIRED SKILLS AND KNOWLEDGE****Required skills**

- research and interpretive skills to locate, interpret and apply pattern and template production procedures
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret materials required for the production of patterns and templates
- English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information of technical quality working practices and pattern and template production procedures
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the production of patterns and templates, including the use of measuring equipment and communication devices and the reporting/ documenting of results

**Required knowledge**

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- common automotive terminology and vehicle safety requirements
- theory for production of patterns or templates
- pattern and template production techniques and procedures
- preparing drawings and presenting information
- site reporting procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- determining dimensions of finished patterns or templates
- planning processes for producing patterns or templates
- plotting dimensions
- completing a range of patterns or template in accordance with enterprise procedures
- completing post-activity housekeeping

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the production of patterns and templates
- equipment, hand and power tooling appropriate to the production of patterns and templates
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Patterns/templates**

- Patterns/templates are to be used for the purposes of manufacturing parts or assisting the fitting of accessories
- Patterns/templates can be polymer, cardboard or composite material type
- Patterns/templates are to include those drawn and produced by hand and may include those produced by CAD means

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, workplace environment and safety and enterprise first aid
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with site safety, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Resources</b>	Resources may include hand tooling, power tooling, specialist tooling for producing patterns and/templates, specifications, dimensions, drawing equipment, computer equipment and software
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and may include site specific instructions, written instructions, plans or instructions related to

RANGE STATEMENT	
	job/task, telephones and pagers
Information/documents	Sources of information/documents may include: <ul style="list-style-type: none"><li>• schedules/plans/specifications, memos, material safety data sheets, diagrams or sketches</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

Unit sector	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURTTA2009 Carry out pre-repair operations (mechanical)

### Modification History

Release	Comment
Release 1	<p>Replaces AURT226008A Carry out pre-repair operations (mechanical)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to clean components by mechanical or chemical means and remove components in preparation for either storage or repair.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence applies to vehicle body, light vehicle, heavy vehicle, mobile plant and motorcycle.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, cleaning of components, the removal of components, tagging and storage of components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake pre-repair operations	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical requirements for pre-repair are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with chemical cleaning agents are observed
2. Clean components prior to repair and/or storage	2.1.Cleaning agents are used according to cleaning agent manufacturer/component supplier instructions 2.2.Cleaning of components is achieved without causing damage to any component or system 2.3.Components of the vehicle are cleaned to facilitate inspection, assessment, replacement, repair and/or storage 2.4.Used cleaning agents and waste materials are safely disposed of according to statutory and enterprise requirements 2.5.Cleaning activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
3. Remove, tag and store components	3.1.Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2.Components are removed, tagged and stored without causing damage to any component or system 3.3.Components are removed and tagged in preparation for storage or use 3.4.Components are treated with rust prevention following cleaning process and stored in accordance with manufacturer/component supplier specifications and enterprise procedures, to prevent injury to self and others or damage to components 3.5.Removal and storage activities are carried out according to industry regulations/guidelines, WHS

ELEMENT	PERFORMANCE CRITERIA
	<p>legislation, legislation and enterprise procedures/policies</p> <p>3.6. Report on additional parts required to complete the repair (not listed on quotation) is completed in accordance with enterprise policy</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to carry out pre-repair operations, including the use of measuring equipment, and communication devices, cleaning equipment and systems and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types and layout of service/repair manuals (hard copy and electronic)
- dangers of working with chemical cleaning agents and cleaning equipment
- cleaning procedures
- dismantling procedures
- good working practices to avoid damage to electrical components
- manual handling techniques
- storage procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting cleaning, dismantling and storage in accordance with workplace requirements
- completing cleaning, dismantling and storage to manufacturer/component supplier requirements
- completing cleaning, dismantling and storage of components within workplace timeframes

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to carrying out pre-repair operations
- equipment, hand and power tooling appropriate to carrying out pre-repair operations
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

**EVIDENCE GUIDE**

	<p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Unit scope**

Methods include:

- steam cleaning, high-pressure washing, manual washing and the use of protective coverings
- dismantling

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling and equipment, personal and vehicle protection, storage tabs and racks, special equipment (pressure washers, steam cleaners, spray equipment), power tooling, jacks and stands, lifting equipment

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include cleaning agents/sprays (dewaxing, detergents, degreasers, special purpose agents) and rust prevention material
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to carrying out pre-repair operations</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURTTA2010 Service and repair trailers up to 4.5 tonnes

### Modification History

Release	Comment
Release 1	Replaces AURT237272A Service and repair trailers up to 4.5 tonnes Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation
Release 2	Minor typographical errors corrected

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency describes the skills and knowledge required to service and repair trailers with an aggregate trailer mass (ATM) of up to 4.5 tonnes.</p> <p>It requires the ability to identify and confirm work requirements, to use technical skills to service, repair and/or maintain trailers up to 4.5 tonnes, and to complete the work finalisation processes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who undertake and document the adjustment, servicing and repair of trailers with an ATM of up to 4.5 tonnes. This includes trailers of varying types and in varying environments.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate workplace health and safety (WHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source service procedures and relevant workshop manuals and manufacturer information 1.4. Access and interpret state and territory regulations and requirements 1.5. Check and prepare tools, equipment and materials 1.6. Decide service and/or repair method in accordance with WHS, environmental and industry regulations and guidelines, and enterprise procedures 1.7. Set up work area
2. Adjust trailer to suit individual applications	2.1. Identify trailer application 2.2. Use methods, equipment and tolerances suitable to the trailer application and in accordance with manufacturer specifications to adjust suspension and chassis 2.3. Carry out adjustment in accordance with manufacturer and component supplier specifications, and WHS and workplace environmental and sustainable procedures and practices
3. Test, service, repair and/or maintain trailer	3.1. Select appropriate diagnostic test 3.2. Undertake testing of trailer 3.3. Identify service, repair and/or maintenance requirements 3.4. Carry out brake adjustment, including handbrake 3.5. Carry out bleeding of hydraulic braking system 3.6. Carry out service, repair and/or maintenance using methods, equipment and tolerances suitable to the trailer application in accordance with manufacturer specifications and WHS and workplace environmental and sustainable procedures and practices
4. Verify system	4.1. Apply and release brakes a number of times 4.2. Test trailer lighting circuits 4.3. Undertake visual and audible tests 4.4. Repair and eliminate identified issues 4.5. Organise for trailer to be tow tested

ELEMENT	PERFORMANCE CRITERIA
5. Clean up work area and maintain equipment	<p>5.1.Clean and inspect equipment and tooling according to workplace requirements</p> <p>5.2.Tag unserviceable equipment and faults identified in accordance with workplace requirements</p> <p>5.3.Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as required</p> <p>5.4.Clean work area, dispose of waste and scrap, and store re-useable material, tools and equipment in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to service, repair and/or maintain trailers and components up to 4.5 tonnes, including use of workplace computerised technology for the testing, reporting and recording of results
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to interpret technical information and specifications, and to complete workplace documents
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- types of load carrying trailers with a gross trailer mass rating (GTMR) or ATM up to 4.5 tonnes
- brake types
- electrical circuit types and related Australian Design Rules
- trailer service, repair and maintenance procedures applicable to the trailer type
- work organisation and planning processes
- transport regulations for each state and territory, including braking requirements for trailers with a GTMR or ATM up to 4.5 tonnes
- documenting and reporting requirements/procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides related to the servicing and repairing of trailers up to 4.5 tonnes and components

**REQUIRED SKILLS AND KNOWLEDGE**

- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to the servicing and repairing of trailers up to 4.5 tonnes and components
- organisational policies and procedures, including quality requirements and reporting and recording procedures, related to servicing and repairing of trailers up to 4.5 tonnes and components

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select servicing and repair methods and techniques appropriate to the circumstances and trailer type
- complete preparatory activity in a systematic manner
- adjust, service, repair and maintain three (3) different types of trailers
- complete workplace and equipment records and workplace clean-up requirements
- present trailer to customer or for storage in compliance with work requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - appropriate worksite
  - a range of trailers up to 4.5 tonnes requiring servicing, repairing and/or maintaining
  - specifications and work instructions
  - equipment, hand and power tooling appropriate to servicing, repairing and/or maintaining trailers up to 4.5 tonnes
  - relevant information, including manufacturer

<b>EVIDENCE GUIDE</b>	
	specifications.
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Trailers</b>	<p>Trailers with a GTMR or ATM less than 4.5 tonnes may include:</p> <ul style="list-style-type: none"> <li>• boat trailers</li> <li>• car trailers</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• horse floats</li> <li>• plant trailers</li> <li>• farm trailers</li> <li>• mobile home carrier</li> <li>• motor cycle trailers</li> <li>• box trailers</li> <li>• caravan semi trailer</li> <li>• pig trailers</li> <li>• dog trailers</li> </ul>
<b>Servicing, repair and/or maintaining</b>	Servicing, repair and/or maintaining may include: <ul style="list-style-type: none"> <li>• minor adjustments</li> <li>• operational testing</li> <li>• replacement of fluids and filters</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tools</li> <li>• testing equipment, including multimeters</li> <li>• brake bleeding equipment</li> <li>• power tools</li> <li>• air tools</li> <li>• specialist tools and equipment</li> <li>• lubricating equipment</li> <li>• measuring equipment</li> <li>• pressure gauges</li> <li>• vacuum gauges</li> <li>• manufacturer special stools</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• spare parts</li> <li>• lubricants</li> <li>• fluids</li> <li>• cleaning materials</li> </ul>
<b>Safe operating procedures</b>	Safe operating procedures may include: <ul style="list-style-type: none"> <li>• operational risk assessment and treatments</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> </ul>

**RANGE STATEMENT****Information/documents**

Information/documents may include:

- verbal, written and graphical instructions issued by authorised internal and external persons
- parts listing prices and catalogues
- inventory systems
- Repair Times manuals
- material safety data sheets (MSDS)
- diagrams or sketches
- engineer's design specifications and instructions
- manufacturer specifications
- industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard)
- Australian Road Transport (ARTSA) - Brake Code of Practice
- Australian standards
- workplace specifications and requirements
- current driver's licence

**Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- duty of care

**WHS requirements**

WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> <li>• road rules</li> <li>• safe driving policy</li> </ul>
<b>Environmental requirements</b>	Environmental requirements may include: <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Organisational policies and procedures</b>	Organisational policies and procedures may include: <ul style="list-style-type: none"> <li>• quality policies and procedures, including Australian standards</li> <li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• safe work procedures</li> <li>• reporting and recording procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURTTA3011 Install hydraulic systems to specified applications

### Modification History

Release	Comment
Release 1	<p>Replaces AURT309131B Install hydraulic systems to specified applications</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out installation of hydraulic systems to manufacturer/component supplier, customer and workplace requirements.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of systems, installation of hydraulic systems, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves vehicles requiring installation of hydraulic systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to install hydraulic systems	<ul style="list-style-type: none"><li>1.1.Nature and scope of work requirements are identified and confirmed</li><li>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</li><li>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.5.Technical requirements for testing and installing hydraulic systems are sourced and support equipment is identified and prepared</li><li>1.6.Warnings in relation to working with hydraulic systems are observed</li></ul>
2. Carry out installation	<ul style="list-style-type: none"><li>2.1.Methods for installation are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</li><li>2.2.Adjustments made during the installation are in accordance with manufacturer/component supplier specifications</li></ul>
3. Prepare vehicle/ hydraulic system for use or storage	<ul style="list-style-type: none"><li>3.1.Installation documentation is completed</li><li>3.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</li><li>3.3.Final inspection is made to ensure work is to workplace expectations</li><li>3.4.Vehicle/system is cleaned for use or storage to workplace expectations</li><li>3.5.Job card is processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the installation of hydraulic systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with hydraulic equipment
- operating principles of hydraulic systems and components and their relationship to each other, including actuators, conductors, pressure flow, and direction control systems
- types and layout of service/repair manuals (hard copy and electronic)
- hydraulic system operating procedures
- installation procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operating principles
- interpreting installation diagrams
- conducting installation in accordance with workplace and manufacturer/component supplier requirements
- completing installation of hydraulic systems and associated components within workplace timeframes
- vehicle/hydraulic system presentation to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the installation of hydraulic systems
- equipment, hand and power tooling appropriate to installation of hydraulic systems
- activities covering mandatory task requirements

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Variables</b>	<p>Variables are to include the installation of linear or rotary actuators, conductors and control valves</p>

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, hydraulic load testing devices and hydraulic schematic diagrams

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include spare parts, hydraulic fluids and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the installation of hydraulic systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURTTA3012 Manufacture and install fluid power hose assemblies

### Modification History

Release	Comment
Release 1	<p>Replaces AURT309140A Manufacture and install fluid power hose assemblies</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to manufacture and install fluid power hose assemblies.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, manufacture, installation and testing of fluid power hose assemblies and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes fluid power systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to manufacture fluid power hose assemblies	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or installation requirements for hose assemblies are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with fluid power systems are observed
2. Manufacture fluid power hose assemblies	2.1. Methods for manufacture are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Adjustments made during manufacture are in accordance with manufacturer/component supplier specifications
3. Install fluid power hose assemblies	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information for installation are identified and sourced 3.3. Technical and tool requirements for installation are identified and support equipment is identified and prepared 3.4. Hose assemblies are installed in accordance with specifications
4. Conduct fluid power hose assembly tests and analyse results	4.1. Methods for fluid power hose assembly tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 4.2. Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 4.3. Results are documented with evidence and supporting information and recommendation(s) made

ELEMENT	PERFORMANCE CRITERIA
	4.4. Report is forwarded to persons for action in accordance with workplace procedures
5. Prepare fluid power system for use or storage	5.1. Documentation following manufacturing procedure is completed 5.2. Final inspection is made to ensure safety features are in place 5.3. Final inspection is made to ensure work is to workplace expectations 5.4. Fluid power system is cleaned for use or storage to workplace expectations 5.5. Job card is completed and delivered to appropriate persons

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the manufacture and installation of fluid power hose assemblies, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with fluid power equipment
- operating principles of power systems their relationship to each other
- manufacturing procedures
- installation procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- manufacturing and installing hose assemblies to manufacturer/component supplier requirements and within workplace timeframes
- conducting tests to manufacturer/component supplier requirements
- interpreting test results
- fluid power system presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the manufacture and installation of fluid power hose assemblies
- equipment, hand and power tooling appropriate to the manufacture and installation of fluid power hose assemblies
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Safety (WHS)**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>WHS</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Personal protective equipment</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Safe operating procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Emergency procedures</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include hosing, installations consumables and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault

<b>RANGE STATEMENT</b>	
	documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to manufacture and installation of fluid power hose assemblies</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical
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## AURTTA3013 Repair hydraulic systems

### Modification History

Release	Comment
Release 1	Replaces AURT309166A Repair hydraulic systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the testing and repair of hydraulic systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of the work requirement, preparation for work, testing, analysis of results and repair of hydraulic system faults and work finalisation processes, including clean-up and documentation.</p> <p>Work involves vehicles fitted with hydraulic systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake testing of hydraulic system	1.1. Nature and scope of the work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals, specifications and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or hydraulic testing requirements for hydraulic systems are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with fluids under pressure are observed
2. Test hydraulic system and analyse results	2.1. Methods for the conduct of the testing implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is forwarded to appropriate persons for action in accordance with workplace procedures
3. Prepare to repair hydraulic systems	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information required are identified and sourced 3.3. Technical and tooling requirements for the repair are identified and support equipment is identified and prepared
4. Carry out repair	4.1. Methods for the conduct of the repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 4.2. All adjustments made during the repair are in accordance with manufacturer/component supplier specifications

ELEMENT	PERFORMANCE CRITERIA
5. Prepare vehicle/system for use or storage	<ul style="list-style-type: none"><li>5.1.Repair schedule documentation is completed</li><li>5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</li><li>5.3.Final inspection is made to ensure work is to workplace expectations</li><li>5.4.Vehicle/system is cleaned for use or stored to workplace expectations</li><li>5.5.Job card is processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the repair of hydraulic systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with hydraulically operated equipment
- identification of the application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- identification of hydraulic system schematic symbols
- types and layout of service/repair manuals (hard copy and electronic)
- hydraulic system testing procedures
- hydraulic system repair procedures
- enterprise quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of the application, purpose and operation
- application of the full repair sequence as per the Range Statement to a hydraulic system relative to the qualification being sought
- interpreting of the system test results
- conducting the repair in accordance with workplace and manufacturer/component supplier requirements
- completing repair of hydraulic systems and associated components within workplace timeframes
- vehicle/hydraulic system presentation to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to carrying out the testing and repair of hydraulic systems

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• equipment, hand and power tooling appropriate to carrying out the testing and repair of hydraulic systems</li> <li>• activities covering the mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Variables</b>	Variables include: <ul style="list-style-type: none"> <li>• linear or rotary actuators</li> <li>• conductors</li> <li>• pressure flow or directional control valves and pumps</li> <li>• pumps may be of gear, vane or piston design</li> </ul>
<b>Repair methods</b>	Repair methods and sequence are to include isolation of faults, dismantling, inspection and evaluation, replacement of components parts, assembly and completion of operational tests and records
<b>Faults</b>	Faults to include, excessive internal leakage in both actuators and pumps, low operating pressure and implement creep
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting,

<b>RANGE STATEMENT</b>	
	working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, and hydraulic hose repair and load testing devices
<b>Materials</b>	Materials may include hydraulic fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the testing and repair of hydraulic systems</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including</li> </ul>

**RANGE STATEMENT**

	<p>Australian Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Relevant Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA3014 Assemble and install pneumatic systems and components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT309604A Assemble and install pneumatic systems/components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to assemble, install and test pneumatic systems and components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, assembly and installation of pneumatic systems/components, testing and analysis of outcomes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes vehicle pneumatic systems, including those involved in the mining and heavy vehicle industry.</p> <p>Work is to include installation of linear or rotary actuators, drive motors, conductors and control valves.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to assemble and install pneumatic systems/components	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and testing requirements for pneumatic systems are sourced and support equipment is identified and prepared 1.6. Support tooling and equipment are selected and prepared for use 1.7. Warnings in relation to working with pneumatic systems are observed
2. Assemble and install pneumatic systems/components	2.1. Methods for assembly and installation are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications 2.2. Adjustments made during the assembly/installation are in accordance with manufacturer/component supplier specifications 2.3. Documentation of observations is completed
3. Conduct and analyse pneumatic system tests	3.1. Methods for tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2. Test results are compared with manufacturer/component supplier specifications 3.3. Final adjustments are made to achieve compliance with manufacturer/component supplier specifications to indicate compliance or non-compliance 3.4. Results are documented with evidence and supporting information and recommendation(s) made 3.5. Report is forwarded to persons for action in accordance with workplace procedures

ELEMENT	PERFORMANCE CRITERIA
4. Prepare vehicle/ pneumatic system for use or storage	4.1.Assembly and installation schedule documentation is completed 4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3.Final inspection is made to ensure work is to workplace expectations 4.4.Vehicle/pneumatic system is cleaned for use or storage to workplace expectations 4.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use workplace technology related to the assembly and installation of pneumatic systems/components, including the use of diagnostic and specialised tooling and equipments, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- types, characteristics, uses and limitations of common pneumatic systems
- operating principles of pneumatic systems and their relationship to each other
- dangers of working with pneumatic systems
- types and layout of service/repair manuals (hard copy and electronic)
- techniques for interpretation of schematic diagrams relevant to pneumatic systems
- techniques for reading and interpreting engineering drawings
- pneumatic systems test procedures
- pneumatic systems assembly/installation procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting assembly/installation of a range of pneumatic components in accordance with manufacturer/component supplier and workplace requirements
- interpreting test results
- completing work within workplace timeframes
- vehicle/pneumatic system presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the assembly and installation of pneumatic systems/components
- equipment, hand and power tooling appropriate to the assembly and installation of pneumatic systems/components
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

	<p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use

<b>RANGE STATEMENT</b>	
	of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load and pressure testing devices
<b>Materials</b>	Materials may include spare parts, lubricants, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific

**RANGE STATEMENT**

	instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the assembly and installation of pneumatic system/components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA3015 Prepare engineering drawings

### Modification History

Release	Comment
Release 1	Replaces AURT325149A Prepare engineering drawings Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to prepare engineering drawings applicable to an automotive environment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit covers the preparation of engineering drawings applicable to manufacturing or modification of products in an automotive environment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine the job requirements, including job sheets, preparation procedures and manufacturer/component supplier specifications</li><li>1.2. Job specifications are read and interpreted</li><li>1.3. WHS requirements, including personal protection needs, are observed throughout the work</li><li>1.4. Product/system/component/item to be drawn is identified</li><li>1.5. Correct instruments and equipment are identified and checked for safe use</li></ul>
2. Prepare engineering drawing	<ul style="list-style-type: none"><li>2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications</li><li>2.2. Drawing instruments, equipment and materials are selected to match the complexity of the requirement</li><li>2.3. Symbols, codes, legends and diagrammatic representations are used</li><li>2.4. Correct dimensions, tolerances and material specifications are used</li><li>2.5. Engineering drawings are completed and checked for accuracy</li><li>2.6. Activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies</li></ul>
3. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>3.1. Waste and scrap is removed following workplace procedure</li><li>3.2. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</li><li>3.3. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures</li><li>3.4. Instruments are maintained and stored in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for preparing engineering drawings
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the documenting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment, materials and drawing instruments to avoid backtracking, workflow interruptions or time wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly represent unit/object/subject dimensions and specifications
- use pre-checking and inspection techniques to anticipate planning and scheduling problems and avoid wastage of time
- use workplace technology related to the preparation of engineering drawings, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- techniques for interpretation of manufacturing/ modification specifications
- equipment operating procedures
- ISO standards
- technical information, including symbols, codes, legends and diagrammatic representations
- computer-aided design techniques and applications
- engineering drawing procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- preparing engineering drawings covering manufacture or modification of a minimum of three different products both hand and computer-aided processes
- preparing and presenting engineering drawings to customer and enterprise requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the preparation of engineering drawings
- equipment, hand and power tooling appropriate to the preparation of engineering drawings
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

**EVIDENCE GUIDE**

	<p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include:

- hand and instrument drawing
- computer-aided drawing

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, workplace environment and safety and enterprise

<b>RANGE STATEMENT</b>	
	first aid
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with site safety, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Resources</b>	Resources are to include computers, CAD software, drawing boards, drawing machines, drawing paper and rulers, T-squares, measuring equipment, pens and pencils
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• schedules/plans/specifications, memos, material safety data sheets, diagrams or sketches</li> <li>• regulatory/legislative requirements pertaining</li> </ul>

**RANGE STATEMENT**

	<p>to automotive industry, including Australian Design Rules</p> <ul style="list-style-type: none"><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA3017 Carry out vehicle safety and roadworthy inspections

### Modification History

Release	Comment
Release 1	<p>Replaces AURT365508A Carry out vehicle safety/roadworthy inspection</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to complete a vehicle safety inspection and to report on findings compared with standards by vehicle manufacturer/component supplier, legislation, regulatory bodies and industry organisations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence applies to the following and should be contextualised to the qualification to which it is being applied.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake a vehicle safety inspection	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for inspection are sourced and support equipment is identified and prepared
2. Complete vehicle inspection	2.1. Correct information is accessed and interpreted from appropriate sources to enable inspection to conform to standards and procedures 2.2. Vehicle inspection is carried out using approved methods and equipment, according to specifications and tolerances relative to the vehicle 2.3. Inspection is completed without causing damage to any component or system 2.4. Vehicle components are compared to manufacturer/component supplier specifications
3. Report findings	3.1. Vehicle inspection report is completed in approved format 3.2. Vehicle system tolerances outside vehicle manufacturer/component supplier specifications are highlighted and drawn to the attention of customer and/or reported 3.3. Records relating to vehicle safety inspections are processed in accordance with company policy 3.4. Inspection is completed within enterprise guidelines 3.5. Inspections are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
4. Prepare vehicle for customer delivery	4.1. Inspection documentation is completed 4.2. Final inspection is made to ensure safety features are in place 4.3. Vehicle is presented to workplace expectations 4.4. Job card is completed and delivered to appropriate

ELEMENT	PERFORMANCE CRITERIA
	persons

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to vehicle safety/ roadworthy inspections, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- Australian Design Rules
- vehicle/component inspection procedures
- inspection checklists
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection in accordance with regulatory and/or workplace requirements
- interpreting condition of the components compared with manufacturer/component supplier specifications
- inspection of vehicle and its associated components within workplace timeframes
- completing the written inspection report
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to vehicle safety/roadworthy inspections
- equipment, hand and power tooling appropriate to vehicle safety/roadworthy inspections
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods include conducting a vehicle inspection by vehicle manufacturer/component supplier, State/Territory legislation, industry practices and/or customer requirements

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand or hand-held power tooling, ramps, hoists, pits, measuring equipment, specialist tooling for

RANGE STATEMENT	
	removal and testing equipment, including meters and gauges
<b>Materials</b>	Materials may include vehicle protection and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to vehicle safety/roadworthy inspections</li><li>• regulatory/legislative requirements pertaining to vehicle safety</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURTTA3018 Carry out diagnostic procedures

### Modification History

Release	Comment
Release 1	Replaces AURT366108A Carry out diagnostic procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to diagnose component/equipment faults from different symptoms and to nominate repair action.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose faults	1.1.Information is accessed from appropriate sources 1.2.Differentiate between "symptoms" and "causes" 1.3.Identify fault diagnosis as a process 1.4.Familiarisation of system(s) from the area of the fault's origin
2. Apply technology to isolate fault(s)	2.1.Diagnosis strategy is developed that can be used to determine a fault within the component/equipment 2.2.Meters/gauges/measuring equipment is applied to isolate fault 2.3.Identification of fault(s) are made from test results 2.4.Findings are confirmed by an alternate route/plan 2.5.Faults are diagnosed without causing damage to workplace property, component or equipment 2.6.Inspections are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
3. Recommend rectification method(s)	3.1.Report of findings is completed in workplace approved format 3.2.Rectification strategy is identified 3.3.Consequences of ignoring strategy are identified 3.4.Any faults in conflict with roadworthiness or safe operation of component/equipment are immediately brought to the attention of the supervisor for action
4. Component/equipment is prepared for customer use	4.1.Work schedule documentation is completed 4.2.Final inspection is made to ensure safety features are in place 4.3.Final inspection is made to ensure work is to workplace expectations 4.4.Job card is completed and delivered to appropriate persons

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use workplace technology related to the diagnosis of faults, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- diagnostic procedures and problem-solving techniques
- documenting procedures
- symptom and cause differentiation
- documenting responsibilities
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting diagnosis of a range of faults in accordance with workplace requirements to test and verify symptoms
- interpret results
- confirm diagnosis of fault(s)
- diagnosis carried out to manufacturer/component supplier requirements
- complete diagnosis within workplace timeframes
- component/equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to diagnosis of faults
- equipment, hand and power tooling appropriate to the diagnosis of faults
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

	<p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Diagnose problems**

Diagnosis is a process of elimination, fault find and fault isolation

**Diagnostic methods**

Diagnostic methods are to include:

- removal and replacement, dismantling,

<b>RANGE STATEMENT</b>	
	adjusting <ul style="list-style-type: none"> <li>• visual and aural identification and testing</li> <li>• component/equipment performance comparison</li> <li>• on-and off-site, indoor and outdoor and on-and off-shore diagnosis</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities

<b>RANGE STATEMENT</b>	
	administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include computer software, computer hardware, specific tooling and equipment used for dismantling, testing and diagnosis, meters, gauges and measuring equipment
<b>Materials</b>	Materials may include minor spare parts and consumables and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the diagnosis of faults</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels) and National Environment Protection For Diesel Vehicle Guidelines</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA3019 Carry out advanced diagnostic procedures

### Modification History

Release	Comment
Release 1	<p>Replaces AURT366308A Carry out advanced diagnostic procedures</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to determine the precise location of component faults within various vehicle systems using advanced diagnostic procedures and specialist diagnostic tooling and equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, diagnosis and identification of cause(s) of faults, establishment of repair requirements and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for diagnostic procedures	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Technical and/or calibration requirements for testing and diagnosis are sourced and support equipment is identified and prepared</p>
2. Analyse reported faults	<p>2.1.Information is gathered to provide a full overview of faults and conditions under which they occur</p> <p>2.2.Function and operation of the system when operating correctly are identified</p> <p>2.3.Systematic faultfinding processes are used across systems to determine the extent of fault</p> <p>2.4.Additional technical sources are consulted to assist with analysis</p> <p>2.5.Actual faults are distinguished from perceived faults</p>
3. Identify causes of faults	<p>3.1.Selected diagnostic equipment is prepared for attachment or vehicle use according to manufacturer/component supplier instruction or enterprise standard operating procedures</p> <p>3.2.Vehicle is correctly and safely attached to or on selected diagnostic equipment according to enterprise work practices or standard operating procedures</p> <p>3.3.Calibration or pre-test adjustments are completed according to specific equipment operating procedures before diagnostic tests are carried out</p> <p>3.4.Diagnostic tests are carried out according to enterprise test guidelines to determine location of specific component faults</p> <p>3.5.Source/cause of faults isolated and confirmed</p>
4. Establish repair requirements	<p>4.1.Viability of repair or replacement is assessed</p> <p>4.2.Repair procedures are identified and prescribed to meet customer service requirements</p> <p>4.3.Repair requirements are clearly and legibly documented and/or communicated to appropriate persons</p> <p>4.4.Repairs involving equipment/skills not held in the workshop are sourced from specialist workshops</p> <p>4.5.Customer is informed of the diagnosis and repair</p>

ELEMENT	PERFORMANCE CRITERIA
	requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to advanced diagnostic procedures, including the use of measuring equipment, computerised technology and electronics, communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- correct function and operation of the complex automotive systems
- symptom and cause differentiation
- diagnostic procedures and problem-solving techniques
- test procedures and test instrument application
- documenting and documenting procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- analysing faults in complex systems, identifying cause(s) of faults and establishing repair requirements within an established timeframe for at least three of the following systems:
  - mechanical
  - hydraulic
  - pneumatic
  - electrical/electronic

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to advanced diagnostic procedures
- equipment, hand and power tooling appropriate to advanced diagnostic procedures
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

	<p>of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid,

<b>RANGE STATEMENT</b>	
	hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include multimeters, exhaust gas analysers, chassis dynamometers, shock absorber testers and electronic engine management testing equipment
<b>Materials</b>	Materials may include spare parts, consumables and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific

**RANGE STATEMENT**

	instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to advanced diagnostic procedures</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA3020 Apply heat-induction processes

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to apply heat using induction processes when repairing vehicle chassis and components.</p> <p>Work involves identifying and confirming work requirements, preparing for work, selecting heat-induction equipment, applying methods and heat settings according to original equipment manufacturer (OEM) specifications, and completing clean-up and documentation. The process requires accurate control of heat to damaged vehicle sections in line with OEM specifications.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies to the use of a heat-induction process for the repair of vehicle chassis and components. Work is undertaken at a body repair technician level.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Work is carried out according to award provisions. Vehicles may include heavy vehicle trucks, buses, commercial vehicles, and agricultural and recreational vehicles.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine job requirements	<p>1.1.Job specifications and repair requirements are interpreted and determined from job sheet and work instructions</p> <p>1.2.Appropriate workplace health and safety (WHS) practices are identified and adhered to according to <b>WHS, legislative</b> and <b>workplace requirements</b></p> <p>1.3.Information is accessed from appropriate source to enable induction heating to be performed according to OEM-recommended procedures</p>
2. Plan and prepare to undertake the work	<p>2.1.Approved induction heat range and heating methods are accessed and used according to OEM specifications on a range of materials</p> <p>2.2.Equipment and <b>resources</b> are identified and inspected for compliance with OEM and job repair specifications</p> <p>2.3.Relevant heat-induction procedures, repair plans, drawings and reference texts are selected according to job sheet instruction</p> <p>2.4.Work is planned in detail in line with vehicle specifications, heating sequence and workplace procedures</p> <p>2.5.Work areas are prepared according to WHS, legislative and workplace requirements</p> <p>2.6.Potential hazards are identified and prevention measures selected according to workplace procedures</p> <p>2.7.Work quality and completion details are finalised according to workplace procedures</p>
3. Conduct work	<p>3.1.Induction heating activities are completed without causing damage to workplace property, vehicles, systems or components</p> <p>3.2.Heat-induction settings are adjusted and supervised according to OEM, industry and workplace <b>standards</b></p> <p>3.3.Repairs to damaged components are carried out according to OEM-recommended procedures and industry and workplace quality standards</p>
4. Clean up work area and maintain equipment	<p>4.1.Work area is cleaned and tidied according to workplace procedures</p> <p>4.2.Waste and scrap materials are removed following workplace and <b>environmental requirements</b> and procedures</p> <p>4.3.Tools and equipment are checked and faulty items are identified and tagged</p> <p>4.4.Equipment maintenance activities are completed according to workplace and manufacturer specifications</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow OEM and job specifications
  - follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - document heat-induction repair procedures and required parts
- numeracy skills to interpret and calculate heat settings and repair measurements
- planning and organising skills to:
  - plan work requirements and prioritise repair activities to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate heat-induction equipment
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, including industry codes of practice and procedures
- teamwork skills to:
  - work with diverse individuals and groups
  - apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to:
  - use workplace tools and equipment relating to the heat-induction process
  - correctly use specialist tools and equipment

#### Required knowledge

- WHS and personal safety requirements
- technical documentation covering procedures, specifications, schedules and work plans

**REQUIRED SKILLS AND KNOWLEDGE**

- industry quality standards, including work instructions, procedures, and performance and inspection processes
- cost minimisation and waste avoidance policies, procedures and practices
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols
- problem-identification and resolution techniques
- procedures for the correct use of heat-induction equipment
- safety requirements for heat-induction equipment
- material types suitable for the application of heat-induction process

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- comply with relevant legislation, regulations, standards, codes of practice and workplace policies and procedures
- maintain working knowledge of current work system and practices
- work and communicate effectively with others involved in the work
- apply job requirements in relation to:
  - achieving induction heating goals
  - achieving work quality goals
  - responding positively to changing work requirements
- effectively apply problem-solving techniques
- modify activities to cater for variations in workplace context and environment
- interpret and communicate operational information
- comply with WHS requirements
- conduct heat-induction processes.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following workplace safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

The following resources must be made available for the assessment of this unit:

- safe work environment
- OEM repair specification
- heat-induction equipment
- workplace or simulated repair activity
- hand tools.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***WHS requirements:***

- are those prescribed under legislation, regulations, codes of practice and policies and procedures
- may include:
  - use of personal protective equipment and clothing
  - use of fire-fighting equipment
  - first aid equipment
  - control and elimination of hazards and risks
  - systems covering the use of hazardous materials and substances
  - manual-handling procedures, including for lifting and carrying.

***Legislative requirements***  
may include:

- applicable legislation, regulations and codes of practice, including those relating to:
  - award and enterprise agreements
  - duty of care
  - employee relations
  - environment protection
  - industry codes of practice.

***Workplace requirements***  
may include:

- environmental management: waste disposal, recycling and re-use guidelines
- emergency and evacuation procedures
- procedures for the use of heat-induction equipment
- legal obligations
- maintenance and storage procedures
- WHS requirements
- workplace guidelines
- policies and procedures relating to own role and responsibility
- instruction manuals
- quality assurance guidelines
- quality and continuous improvement processes and standards
- recording and reporting guidelines.

***Information*** may include:

- OEM-recommended repair specifications
- workplace operating procedures

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>customer requirements</li> <li>industry codes of practice</li> <li>material safety data sheets (MSDS)</li> <li>state and territory WHS legislation.</li> </ul>
<b>Resources</b> may include:	<ul style="list-style-type: none"> <li>hand tools</li> <li>heat-induction equipment</li> <li>components for repair</li> <li>identification of materials used by OEM in chassis and body components</li> <li>job sheets, drawings and work instructions</li> <li>workplace or simulated workplace.</li> </ul>
<b>Standards</b> may include:	<ul style="list-style-type: none"> <li>industry regulations and guidelines</li> <li>OEM repair guidelines</li> <li>WHS legislation</li> <li>workplace quality procedures.</li> </ul>
<b>Environmental requirements</b> may include:	<ul style="list-style-type: none"> <li>measures to reduce pollution</li> <li>waste management</li> <li>noise control</li> <li>dust control</li> <li>clean-up management.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical

**Custom Content Section**

Not applicable.

## AURTTA4021 Carry out diagnosis of complex system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT466208A Carry out diagnosis of complex system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to diagnose faults in systems integrating two or more automotive systems or incorporating three or more of mechanical, hydraulic, pneumatic, electrical or electronic media.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of the work requirement, preparation for work, diagnosis and identification of the causes of faults, establishment of the repair requirements and completion of work finalisation processes, including clean-up and documentation.</p> <p>The unit of competence should be contextualised to the qualification it is being applied.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for diagnostic procedure	1.1. Nature and scope of the work requirements are identified and confirmed. 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work. 1.3. Technical and/or calibration requirements for testing and diagnosis are sourced and support equipment is identified and prepared.
2. Analyse reported faults	2.1. Information is gathered from all sources to provide a full overview of all faults and conditions under which they occur. 2.2. Function and operation of the system when operating correctly are identified. 2.3. Systematic fault-finding processes are used across relevant systems to determine the extent of the fault. 2.4. Additional technical sources are consulted to assist with analysis, if necessary. 2.5. Actual faults are distinguished from perceived faults.
3. Identify causes of faults	3.1. Diagnostic equipment and tests are selected to facilitate precise identification of faults and causes. 3.2. Tests are applied systematically and efficiently to gather precise data on system operation. 3.3. Appropriate use is made of technical information to compare gathered data with specifications. 3.4. Test results and gathered data are compared to system specifications and normal functions, and discrepancies are identified. 3.5. Source/cause of fault is isolated and confirmed.
4. Establish repair requirements	4.1. Viability of repair or replacement is assessed. 4.2. Appropriate repair procedures are identified and prescribed to meet customer service requirements. 4.3. Repair requirements are clearly and legibly documented and/or communicated to appropriate persons. 4.4. Repairs involving equipment/skills not held in the workshop are sourced from specialist workshops. 4.5. Customer is informed of the diagnosis and repair requirements.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the diagnosis of complex system faults, including the use of measuring equipment, computerised technology and electronics, communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- function and operation of the appropriate complex automotive systems
- symptom and cause differentiation
- diagnostic procedures and problem-solving techniques
- test procedures and test instrument application
- documenting and reporting procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• analysing faults in complex systems, identifying the cause(s) of faults and establishing repair requirements within an established timeframe for faults incorporating at least three of the following single systems: mechanical, hydraulic, pneumatic and electrical/electronic.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to the diagnosis of complex system faults</li> <li>• equipment, hand and power tooling appropriate to the diagnosis of complex system faults</li> <li>• activities covering the mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE**

	<p>Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process.</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Complex systems**

A complex system is defined as one which integrates two or more automotive systems, or

**RANGE STATEMENT**

	<p>incorporates three or more of mechanical, hydraulic, pneumatic, electrical or electronic media. Examples include hydraulically/electronically controlled automatic transmissions, anti-lock braking systems, engine management systems integrating ignition, fuel and transmission control systems.</p> <p>Workplace example:</p> <ul style="list-style-type: none"> <li>Customer reports intermittent shifting into top gear on an electronically controlled automatic transmission. The customer is asked a number of questions about the conditions in which the problem occurs (e.g. frequency of the problem, speed, road conditions). A road test is conducted, and the technician detects intermittent speedometer operation. After testing of electrical connections, components and sensors, the intermittent speedometer operation is confirmed to be the problem. Repair requirements are determined to be securing the connections on the speedometer wiring.</li> </ul>
<b>Diagnostic methods</b>	<p>Diagnostic methods are to include:</p> <ul style="list-style-type: none"> <li>questioning of customer</li> <li>road testing</li> <li>hydraulic testing (e.g. performance testing of power steering systems)</li> <li>electrical testing (e.g. performance testing of engine starting systems)</li> <li>electronic testing (e.g. electronic interface diagnostic equipment)</li> <li>mechanical testing (e.g. compression testing on engines)</li> <li>chemical testing (e.g. testing of cooling systems)</li> <li>technical/service manuals</li> <li>component/equipment service history</li> <li>body measurements</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,</p>

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include testing equipment, meters, CRO, code readers, gauges, measuring equipment, gas analysers and sensors
<b>Materials</b>	Materials may include cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault

**RANGE STATEMENT**

	reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to diagnosis of complex system faults</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian design rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA4025 Diagnose complex faults in vehicle integrated stability control systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnosis complex faults in vehicle integrated stability control systems in order to initiate action to service, repair, replace or to improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of vehicle integrated stability control systems of motorcycles, light vehicles, heavy commercial vehicles, and vehicles in the mining, construction and agricultural environments.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <i>integrated stability control systems</i> are accessed and interpreted</p> <p>1.3. <i>Workplace health and safety (WHS) requirements</i>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies and discrepancies or <i>faults</i> in integrated stability control systems are identified and confirmed from direct or indirect evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <i>tests</i> and testing process are identified and selected from the range of available options</p> <p>2.4. <i>Testing equipment</i> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <i>diagnostic processes</i> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to integrated stability control systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of integrated stability control systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to integrated stability systems
- concepts, types, functions, operations and limitations of integrated stability systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to integrated stability systems
- testing procedures for integrated stability systems, including procedures for accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different integrated stability systems that include steering, suspension and braking systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in integrated stability systems.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with real or simulated integrated stability control system faults

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• tools and equipment appropriate for the diagnosis of complex faults in integrated stability control systems</li> <li>• technical reference information and workplace instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Integrated stability control systems</i></b> may include:	<ul style="list-style-type: none"> <li>• traction control systems</li> <li>• electronic stability systems</li> <li>• vehicle dynamic control</li> <li>• closed loop electronic steering and multi-class bus systems</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• electrical and electronic failures in stability/steering/suspension/braking systems</li> <li>• direct faults in input sensors, output actuators, wiring harness or computer systems</li> <li>• calibration/adjustment specifications, component specifications, component assembly</li> <li>• component damage and system modifications</li> <li>• indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>• wiring and connector integrity</li> <li>• operator and specification of input and output devices</li> <li>• controlling electronic components and computers</li> <li>• data interpretation</li> <li>• readings related to direct, indirect and intermittent causes</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• analogue and digital multimeters</li> <li>• lab oscilloscopes</li> <li>• scan tools</li> <li>• test lights</li> <li>• test LEDs</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"> <li>• pulse generators and may include manufacturer/component supplier testing equipment</li> </ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to integrated stability control systems</li> <li>• six-step troubleshooting plan</li> <li>• discover-investigate-fix methodology</li> </ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Unit sector	Technical

## Custom Content Section

Not applicable.

## AURTTA4026 Diagnose complex faults in vehicle electric-over-hydraulic systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in vehicle electric over hydraulic systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be electrical, electronic or hydraulic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of vehicle electric over hydraulic systems.</p> <p>Electric over hydraulic systems are characterised as those using solenoids to control hydraulic flow and they may include integrated computer controlled systems. Examples are garbage compactors, crane rams, steering control, excavator bucket control, steering rudder control.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning electric over hydraulic systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies or discrepancies or <b>faults</b> in vehicle electric over hydraulic systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. Testing equipment is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to electric over hydraulic systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of electric over hydraulic systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, hydraulic, electronic and pneumatic systems related to electric over hydraulic systems
- concepts, types, functions, operations and limitations of electric over hydraulic systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to electric over hydraulic systems
- testing procedures for electric over hydraulic systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different electric over hydraulic systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in electric over hydraulic systems.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated electric over hydraulic system faults

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>tools and equipment appropriate for the diagnosis of complex faults in electric over hydraulic systems</li> <li>technical reference information and workplace instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults*** may include:

- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- direct faults in input sensors, output actuators, wiring harness, computer systems, calibration or adjustment specifications
- component specifications, component assembly, component damage and system modifications
- indirect mechanical faults.

***Tests*** may include:

- wiring and connector integrity
- operation and specification of input and output devices
- controlling electronic components and computers
- data interpretation and readings related to direct indirect and intermittent causes
- hydraulic systems testing
- electrical systems testing
- mechanical systems testing
- road test.

***Testing equipment*** may include:

- pressure gauges
- charge stations
- analogue and digital multimeters, lab oscilloscopes, scan tools, test lights and test LEDs.

***Diagnostic processes*** may include:

- analysing manufacturer and component supplier specifications, schematics and operational procedures related to electric over hydraulic systems

## RANGE STATEMENT

	<ul style="list-style-type: none"><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology.</li></ul>
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## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Unit sector	Technical

## Custom Content Section

Not applicable.

## AURTTA5022 Develop and apply mechanical system modifications

### Modification History

Release	Comment
Release 1	Replaces AURT574020A Develop and apply mechanical systems modification  Unit code updated to meet policy requirements  Minor change to unit title  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence to develop, apply and validate significant modifications to existing mechanical systems in order to vary or enhance performance.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	This includes the preparation and application of specifications and processes complying with safety, legal and commercial obligations.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the modification requirement	<p>1.1.WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.2.Purpose and objectives of the modification are identified from an analysis of inputs and confirmed with the customer.</p> <p>1.3.Outline options for achieving the required purpose and objectives are identified, framed and presented to the customer prior to proceeding.</p> <p>1.4.Possible legal and safety impacts of the modification are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Develop and validate the modification specification	<p>2.1.Benchmark specifications for the existing mechanical system are accessed and interpreted.</p> <p>2.2.Criteria to be used in the selection of the modification method and in the evaluation of the outcomes are identified and documented.</p> <p>2.3.Proposed modification method is selected following the identification, consideration and evaluation of the full range of available and options.</p> <p>2.4.Selected option, including material choices and processes, is developed in detail and progressively validated against the established criteria.</p> <p>2.5.Modification specification is documented to industry and enterprise standards.</p>
3. Apply and test the modification specification	<p>3.1.Selected modification method and process is followed in accordance with the established specifications.</p> <p>3.2.Modification is completed using equipment, tooling and materials in accordance with accepted industry standards and practices.</p> <p>3.3.Tests and testing equipment are applied in accordance with regulatory requirements, manufacturer/component supplier specifications and modification specification.</p> <p>3.4.Test results and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes.</p> <p>3.5.Variations necessitated during the modification process or as a result of testing are incorporated into</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>the modification specification.</p> <p>3.6.Information and detail related to the modification is documented and provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Clean up work area and maintain equipment	<p>4.1.Materials that can be reused is collected and stored.</p> <p>4.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>4.3.Waste and scrap is removed following workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand legal and technical information related to contemporary mechanical systems modifications.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the development and planning of modification processes, preparation and layout of the worksite and the obtaining of tooling, equipment, materials and testing equipment to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate specifications, calibrate and establish testing equipment and evaluate modification results against pre-established criteria.
- establish modification methods and processes which anticipate and allow for risks and avoid or minimise reworking and avoid wastage.
- use the full range of workplace technology related to mechanical systems modification, including testing equipment, maintenance equipment, tooling, calculators and measuring devices and information management systems.

#### Required knowledge

- electrical theory covering voltage, current, resistance, power, magnetism and inductance (including semi-conductors and electronic system applications).
- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- detailed knowledge of the types, functions, operations and limitations of the main automotive industry mechanical systems.
- general knowledge of automotive digital computing systems.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting modification specifications and outcomes.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Modify a significant mechanical system or sub-system including:
  - the selection, development and documenting of success factors and evaluation criteria before undertaking the modification
  - the selection, development and validation of the modification methodology, process(es) and specification
  - the application of the modification specification (methodology and process), and
  - the documenting and reporting of the outcomes.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials and deadlines.

Access to operational mechanical system(s), information on the required or proposed modification, testing equipment for the work and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related and require portfolios or other forms of indirect evidence of process. Direct evidence will include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other projects.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Mechanical modifications**

- Mechanical modifications to be covered by this unit are to cover significant and non-routine mechanical modifications which may include:
  - adapt or modify the mechanical system(s) of vehicles/plant to a significantly changed capability
  - adapt vehicles/plant mechanical systems for different working conditions, for example high altitude or underground mine
  - modify or install a significant mechanical system(s) for a special purpose vehicle in preparation for vehicle registration.

**Inputs to the modification method and processes**

Inputs to the modification method and processes may be obtained from customer requirements, manufacturer/ component supplier specifications, outcomes of diagnostic processes or from regulatory, licensing and intellectual property legislation, safety requirements and Australian Design Rules.

<b>RANGE STATEMENT</b>	
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluation criteria</b>	Evaluation criteria, sometimes referred to as success factors, are to be established prior to a modification being undertaken and are to cover safety, functionality, survivability, maintainability, life cycle cost and aesthetics.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.
<b>Tests and testing equipment</b>	Tests and testing equipment is to include that appropriate to the modification being carried out but it should include computer-based diagnostic systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>Workplace procedures relating to the use of tooling and equipment.</li> <li>Workplace procedures relating to reporting and communication.</li> <li>Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>Manufacturer/component supplier specifications, schematics and operational procedures related to mechanical systems modification.</li> <li>Australian Design Rules.</li> <li>Vehicle industry regulations.</li> <li>Vehicle industry publications related to</li> </ul>

**RANGE STATEMENT**

	emerging transmission system technology and technology changes.
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA5023 Develop and apply hydraulic system modifications

### Modification History

Release	Comment
Release 1	<p>Replaces AURT574120A Develop and apply hydraulic systems modification</p> <p>Unit code updated to meet policy requirements</p> <p>Minor change to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to develop, apply and validate significant modifications to existing hydraulic systems in order to vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This includes the preparation and application of specifications and processes complying with safety, legal and commercial obligations.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the modification requirement	<p>1.1.WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.2.Purpose and objectives of the modification are identified from an analysis of inputs and confirmed with the customer.</p> <p>1.3.Outline options for achieving the required purpose and objectives are identified, framed and presented to the customer prior to proceeding.</p> <p>1.4.Possible legal and safety impacts of the modification are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Develop and validate the modification specification	<p>2.1.Benchmark specifications for the existing hydraulic system are accessed and interpreted.</p> <p>2.2.Criteria to be used in the selection of the modification method and in the evaluation of the outcomes are identified and documented.</p> <p>2.3.Proposed modification method is selected following the identification, consideration and evaluation of the full range of available and relevant options.</p> <p>2.4.Selected option, including material choices and processes, is developed in detail and progressively validated against the established criteria.</p> <p>2.5.Modification specification is documented to industry and enterprise standards.</p>
3. Apply and test the modification specification	<p>3.1.Selected modification method and process is followed in accordance with the established specifications.</p> <p>3.2.Modification is completed using equipment, tooling and materials in accordance with accepted industry standards and practices.</p>
4. Apply and test the modification specification	<p>4.1.Tests and testing equipment are applied in accordance with regulatory requirements, manufacturer/component supplier specifications and modification specification.</p> <p>4.2.Test results and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes.</p> <p>4.3.Variations necessitated during the modification process or as a result of testing are incorporated into</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>the modification specification.</p> <p>4.4.Information and detail related to the modification is documented and provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
5. Clean up work area and maintain equipment	<p>5.1.Materials that can be reused is collected and stored.</p> <p>5.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3.Waste and scrap is removed following workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p> <p>5.5.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand legal and technical information related to contemporary hydraulic systems modifications.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the development and planning of modification processes, preparation and layout of the worksite and the obtaining of tooling, equipment, materials and testing equipment to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate specifications, calibrate and establish testing equipment and evaluate modification results against pre-established criteria.
- establish modification methods and processes which anticipate and allow for risks and avoid or minimise reworking and avoid wastage.
- use the full range of workplace technology related to hydraulic systems modification, including testing equipment, maintenance equipment, tooling, calculators and measuring devices and information management systems.

#### Required knowledge

- electrical theory covering voltage, current, resistance, power, magnetism and inductance (including semi-conductors and electronic system applications).
- hydraulic theory covering the concepts and principles of hydraulic and pneumatic systems.
- detailed knowledge of the types, functions, operations and limitations of the main automotive industry hydraulic systems.
- general knowledge of automotive digital computing systems.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting modification specifications and outcomes.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Modify a significant hydraulic system or sub-system, including:
  - the selection, development and documenting of success factors and evaluation criteria before undertaking the modification
  - selection, development and validation of the modification methodology, process(es) and specification
  - application of the modification specification (methodology and process), and
  - documenting and reporting of the outcomes.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials and deadlines.

Access to operational hydraulic system(s), information on the required or proposed modification, testing equipment for the work and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related and require portfolios or other forms of indirect evidence of process. Direct evidence will include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other projects.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Hydraulic modifications**

Hydraulic modifications to be covered by this unit are to cover significant and non-routine hydraulic modifications which may include:

- adapt or modify the hydraulic system(s) of vehicles/plant to a significantly changed capability
- adapt vehicles/plant hydraulic systems for different working conditions, for example high altitude or underground mine
- modify or install a significant hydraulic system(s) for a special purpose vehicle in preparation for vehicle registration.

**Inputs to the modification method and processes**

Inputs to the modification method and processes may be obtained from customer requirements, manufacturer/ component supplier specifications, outcomes of diagnostic processes, or from regulatory, licensing and intellectual property legislation, safety requirements and Australian Design Rules.

<b>RANGE STATEMENT</b>	
<b>Unit context</b>	<ul style="list-style-type: none"> <li>WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluation criteria</b>	Evaluation criteria, sometimes referred to as success factors, are to be established prior to a modification being undertaken and are to cover safety, functionality, survivability, maintainability, life cycle cost and aesthetics.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.
<b>Tests and testing equipment</b>	Tests and testing equipment is to include that appropriate to the modification being carried out but it should include computer-based diagnostic systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>Workplace procedures relating to the use of tooling and equipment.</li> <li>Workplace procedures relating to reporting and communication.</li> <li>Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>Manufacturer/component supplier specifications, schematics and operational procedures related to hydraulic systems modification.</li> <li>Australian Design Rules.</li> <li>Vehicle industry regulations.</li> <li>Vehicle industry publications related to</li> </ul>

**RANGE STATEMENT**

	emerging transmission system technology and technology changes.
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTA5024 Develop and apply pneumatic system modifications

### Modification History

Release	Comment
Release 1	Replaces AURT574220A Develop and apply pneumatic systems modification  Unit code updated to meet policy requirements  Minor changes to unit title  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to develop, apply and validate significant modifications to existing pneumatic systems in order to vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This includes the preparation and application of specifications and processes complying with safety, legal and commercial obligations.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the modification requirement	<p>1.1.WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.2.Purpose and objectives of the modification are identified from an analysis of inputs and confirmed with the customer.</p> <p>1.3.Outline options for achieving the required purpose and objectives are identified, framed and presented to the customer prior to proceeding.</p> <p>1.4.Possible legal and safety impacts of the modification are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Develop and validate the modification specification	<p>2.1.Benchmark specifications for the existing pneumatic system are accessed and interpreted.</p> <p>2.2.Criteria to be used in the selection of the modification method and in the evaluation of the outcomes are identified and documented.</p> <p>2.3.Proposed modification method is selected following the identification, consideration and evaluation of the full range of available and relevant options.</p> <p>2.4.Selected option, including material choices and processes, is developed in detail and progressively validated against the established criteria.</p> <p>2.5.Modification specification is documented to industry and enterprise standards.</p>
3. Apply and test the modification specification	<p>3.1.Selected modification method and process is followed in accordance with the established specifications.</p> <p>3.2.Modification is completed using equipment, tooling and materials in accordance with accepted industry standards and practices .</p> <p>3.3.Tests and testing equipment are applied in accordance with regulatory requirements, manufacturer/component supplier specifications and modification specification.</p> <p>3.4.Test results and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes.</p> <p>3.5.Variations necessitated during the modification process or as a result of testing are incorporated into</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>the modification specification.</p> <p>3.6.Information and detail related to the modification is documented and provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Clean up work area and maintain equipment	<p>4.1.Materials that can be reused is collected and stored.</p> <p>4.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>4.3.Waste and scrap is removed following workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p> <p>4.5.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand legal and technical information related to contemporary pneumatic systems modifications.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the development and planning of modification processes, preparation and layout of the worksite and the obtaining of tooling, equipment, materials and testing equipment to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate specifications, calibrate and establish testing equipment and evaluate modification results against pre-established criteria.
- establish modification methods and processes which anticipate and allow for risks and avoid or minimise reworking and avoid wastage.
- use the full range of workplace technology related to pneumatic systems modification, including testing equipment, maintenance equipment, tooling, calculators and measuring devices and information management systems.

#### Required knowledge

- electrical theory covering voltage, current, resistance, power, magnetism and inductance (including semi-conductors and electronic system applications).
- pneumatic theory covering the concepts and principles of pneumatic, pneumatic and pneumatic systems.
- detailed knowledge of the types, functions, operations and limitations of the main automotive industry pneumatic systems.
- general knowledge of automotive digital computing systems.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting modification specifications and outcomes.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Modify a significant pneumatic system or sub-system including:
  - the selection, development and documenting of success factors and evaluation criteria before undertaking the modification
  - the selection, development and validation of the modification methodology, process(es) and specification
  - the application of the modification specification (methodology and process)
  - the documenting and reporting of the outcomes.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials and deadlines.

Access to operational pneumatic system(s), information on the required or proposed modification, testing equipment for the work and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related and require portfolios or other forms of indirect evidence of process. Direct evidence will include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other projects.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Pneumatic modifications</b>	<p>Pneumatic modifications to be covered by this unit are to cover significant and non-routine pneumatic modifications which may include:</p> <ul style="list-style-type: none"> <li>• adapt or modify the pneumatic system(s) of vehicles/plant to a significantly changed capability</li> <li>• modify or install a significant pneumatic system(s) for a special purpose vehicle in preparation for vehicle registration.</li> </ul>
<b>Inputs to the modification method and processes</b>	<ul style="list-style-type: none"> <li>• Inputs to the modification method and processes may be obtained from customer requirements, manufacturer/ component supplier specifications, outcomes of diagnostic processes, or from regulatory and licensing, intellectual property legislation, safety requirements and Australian Design Rules.</li> </ul>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</li> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluation criteria</b>	Evaluation criteria, sometimes referred to as success factors, are to be established prior to a modification being undertaken and are to cover safety, functionality, survivability, maintainability, life cycle cost and aesthetics.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards
<b>Tests and testing equipment</b>	Tests and testing equipment is to include that appropriate to the modification being carried out but it should include computer-based diagnostic systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to pneumatic systems modification.</li> <li>• Australian Design Rules.</li> <li>• Vehicle industry regulations.</li> <li>• Vehicle industry publications related to emerging transmission system technology and technology changes.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURTTB2001 Inspect and service braking systems

### Modification History

Release	Comment
Release 1	Replaces AURT210170A Inspect and service braking systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to inspect and service braking systems and/or associated components, including pneumatic over hydraulic, air, hand and parking brake systems in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit of competency refers to braking systems associated with automotive retail, service and repair and should be contextualised to the level of qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• light vehicle, heavy vehicle, motorcycle or trailer or outdoor power equipment.</li></ul> <p>The unit includes identification and confirmation of work requirement, preparation for work, conduct of brake system wear analysis, servicing of braking systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to undertake braking system inspection</b>	<p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4. Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures</p> <p>1.5. Resources required for inspection of braking systems are sourced and support equipment is identified and prepared</p> <p>1.6. Warnings in relation to working with braking systems are observed</p>
2. <b>Conduct braking system wear analysis</b>	<p>2.1. Braking system analysis is implemented in accordance with road safety legislation, workplace procedures and manufacturer/component supplier specifications</p> <p>2.2. Brake wear measurement results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3. Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4. Report is processed in accordance with workplace procedures</p>
3. <b>Prepare to service braking system and/or associated components</b>	<p>3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2. Procedures and information required are identified and sourced</p> <p>3.3. Resources required for servicing braking systems are identified and support equipment is identified and prepared</p>
4. <b>Carry out servicing of braking systems and/or associated components</b>	<p>4.1. Servicing is implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2. Adjustments made during the servicing are in accordance with manufacturer/component supplier</p>

ELEMENT	PERFORMANCE CRITERIA
	specifications
<b>5. Prepare equipment for use or storage</b>	5.1.Servicing schedule documentation is completed 5.2.Final inspection is made to ensure protective features are in place 5.3.Final inspection is made to ensure work is to workplace expectations 5.4.Equipment is cleaned for use or storage to workplace expectations 5.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and servicing of braking systems, including the use of servicing tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with braking systems
- operating principles of braking systems, components and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- analysis procedures
- servicing procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the inspection in accordance with workplace and manufacturer/component supplier requirements
- accurately interpreting wear analysis results
- completing service of braking systems in accordance with workplace and manufacturer/component supplier requirements
- completing service of braking systems and associated components within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of braking systems
- equipment, hand and power tooling appropriate to the inspection and servicing of braking systems
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Braking systems**

Types of braking systems may include:

- hydraulic

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• mechanical</li> <li>• pneumatic</li> </ul>
<b>System components</b>	<p>System components may include:</p> <ul style="list-style-type: none"> <li>• disc pads</li> <li>• master cylinders</li> <li>• brake shoes</li> <li>• brake callipers</li> <li>• brake hoses</li> <li>• brake actuators</li> <li>• mechanical devices</li> <li>• valves</li> </ul>
<b>Methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>• visual, aural and functional assessments (including damage, corrosion, fluid leaks, wear)</li> <li>• measurements of pedal travel, free-play, disc runout, disc thickness, drum wear and pad/lining thickness</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, machinery movement and operation, manual lifting and shifting, working in proximity to others and site visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to emergency</p>

<b>RANGE STATEMENT</b>	
	shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, gauges (including dial, verniers and micrometers), bleeding and brake testing devices, dust extraction equipment and grease guns
<b>Materials</b>	Materials may include lubricants, fluids, minor spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection and servicing of braking systems</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Brakes
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## AURTTB2002 Attach friction materials and radius grind

### Modification History

Release	Comment
Release 1	Replaces AURT210605A Attach friction materials and radius grind Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to attach brake and clutch frictional materials using bonding, riveting or screwing methods.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involved includes:</p> <ul style="list-style-type: none"><li>• preparation and selection of material</li><li>• attachment of brake and clutch frictional materials by either bonding, riveting or screwing methods</li><li>• radius grinding of brake shoes.</li></ul> <p>The unit includes identification and confirmation of work requirement, preparation for work, selection of friction materials and attachment methods, attachment of friction material to brake shoes/pads and/or clutch plates, radius grinding of brake shoes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to attach friction materials to brake shoes and/or disc pads and/or clutch plates</b>	1.1.The nature and scope of the work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as manufacturer/component supplier procedures and specifications, and tooling required, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Warnings in relation to working with hazardous materials are observed
<b>2. Select and attach friction materials</b>	2.1.Brake shoes/pads and/or clutch plates are prepared for bonding/riveting 2.2.Materials to be attached are selected and prepared in accordance with site procedures 2.3.Friction material attachment procedures are carried out in accordance with legislation, industry and enterprise policies/procedures and guidelines
<b>3. Radius grind brake shoes</b>	3.1.Information required for radius grinding is accessed from manufacturer/component supplier specifications and correctly interpreted 3.2.Radius grinding procedures are carried out in accordance with legislation, industry and enterprise policies/procedures and guidelines 3.3.Brake shoes are tested in accordance with site procedures prior to being placed into service 3.4.Work is completed without causing damage to any component or system 3.5.Workplace documents are completed in accordance with enterprise procedures
<b>4. Prepare brake shoes/pads and/or clutch plate for use or storage</b>	4.1.Work schedule documentation is completed 4.2.Final inspection is made to ensure work is to workplace expectations 4.3.Brake shoes/pads and/or clutch plates are prepared for use or stored to workplace expectations 4.4.Job card is processed in accordance with workplace procedures



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- Apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to attaching friction materials and radius grinding brake and clutch components, including the use of bonding and grinding tooling and equipment, measuring equipment, and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- general knowledge of common automotive terminology and vehicle safety requirements
- dangers of working with hazardous material
- coefficient of friction as related to the different material used in brake and clutch applications
- bonding agents

**REQUIRED SKILLS AND KNOWLEDGE**

- material selection procedures
- bonding/riveting procedures
- enterprise quality procedures
- work organisation and planning processes
- site reporting procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- selecting and attaching friction material to brake shoes/clutch pads in accordance with workplace and manufacturer/component supplier requirements
- carrying out radius grinding of brake shoes to specification
- completing work within workplace timeframes
- brake and/or clutch components is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

The application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to attaching friction materials and radius grinding brake and clutch components
- equipment, hand and power tooling appropriate to attaching friction materials and radius grinding brake and clutch components
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, riveting machines and equipment, radius grinding machines, safety equipment, measuring equipment and specialist equipment, including beating and clamping equipment
<b>Materials</b>	Materials may include bonding material, brake shoes, clutch plates, rivets, bolts and nuts, brake

<b>RANGE STATEMENT</b>	
	and clutch linings and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to attaching friction materials and radius grinding brake and clutch components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURTTB2003 Machine brake drums and brake disc rotors

### Modification History

Release	Comment
Release 1	<p>Replaces AURT210736A Machine brake drums and brake disc rotors</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to recondition brake drums and brake disc rotors by machining.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involved includes drums and rotors used on light vehicles, heavy vehicles, mobile plant, motorcycles, outdoor power equipment and/or trailers.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, machining of brake drums and brake disc rotors, testing of machined components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Work requires manipulative and dexterity skills to perform brake drum and brake disc rotor machining procedures.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to machine drums and rotors</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for machining are sourced and support equipment is identified and prepared
<b>2. Machine brake drums and brake disc rotors</b>	2.1. Components, tooling and equipment required for the work are identified, selected and prepared in accordance with site procedures 2.2. Brake drums and brake disc rotors to be reconditioned are prepared for machining in accordance with site procedures and manufacturer/component supplier safety specifications 2.3. Machining procedures are carried out in accordance with legislation, industry and enterprise policies/procedures guidelines
<b>3. Test machined component(s)</b>	3.1. Machined materials/component(s) are tested in accordance with authorised procedures prior to placing into service 3.2. Testing of machined component(s) is completed without causing damage to any component or system 3.3. Test results are documented to workplace requirements
<b>4. Prepare components for use or storage</b>	4.1. Final inspection is made to ensure work is to workplace expectations 4.2. Machined surfaces are protected against rust 4.3. Machined material/component is prepared for use or stored to workplace expectations 4.4. Job card is processed in accordance with workplace procedures



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to machining brake drums and brake disc rotors, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types and layout of service/repair manuals (hard copy and electronic)
- machining procedures
- tool sharpening procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting machining in accordance with workplace and manufacturer/component supplier requirements
- machining of drums and/or rotors completed within workplace timeframes
- equipment is presented to customer or storage in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to machining brake drums and brake disc rotors
- equipment, hand and power tooling appropriate to machining brake drums and brake disc rotors
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, special installation tooling, measuring equipment, on-vehicle and/or off-vehicle brake machining equipment
<b>Materials</b>	Materials may include braking system spares, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or

**RANGE STATEMENT**

	instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to machining brake drums and brake disc rotors</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Brakes
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## AURTTB2004 Inspect and service air braking systems

### Modification History

Release	Comment
Release 1	Replaces AURT211170A Inspect and service air braking systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out inspection and servicing of air braking systems and/or associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis and servicing of air braking systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves vehicles fitted with air braking systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to undertake inspection of air braking systems</b>	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for the inspection of air braking systems are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with air braking systems are observed</p>
2. <b>Conduct inspection and analyse results</b>	<p>2.1.Methods for the inspection are implemented in accordance with road safety legislation, workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is processed in accordance with workplace procedures</p>
3. <b>Prepare to service air braking systems</b>	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information required are identified and sourced</p> <p>3.3.Technical and tool requirements for servicing are identified and support equipment is identified and prepared</p>
4. <b>Carry out servicing</b>	<p>4.1.Methods for the servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments are made during the service</p>
5. <b>Prepare equipment</b>	<p>5.1.Service schedule documentation is completed</p>

ELEMENT	PERFORMANCE CRITERIA
<b>for use or storage</b>	<p>5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations</p> <p>5.4.Equipment is cleaned for use or storage to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to servicing tooling and equipment, inspection, analysis and servicing of air braking systems, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with air brakes
- operating principles of air braking systems and components and their relationship to each other
- inspection procedures
- types and layout of service/repair manuals (hard copy and electronic)
- servicing procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting inspection results
- conducting the service in accordance with workplace and manufacturer/component supplier requirements
- completing service of air braking systems and associated components within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection, analysis and servicing of air braking systems
- equipment, hand and power tooling appropriate to the inspection, analysis and servicing of air braking systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

	<p>of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Components**

Components to be serviced include:

- compressors
- receivers
- drive belts
- actuator mechanisms

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, gauges and brake testing devices

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include fluids, minor parts, filters and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the inspection, analysis and servicing of air braking systems</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURTTB3005 Assemble and fit braking systems and components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT310104A Assemble and fit braking systems/components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to assemble, fit and test braking systems and associated components, including hydraulic, pneumatic, electrical and mechanical operating systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, assembly, fitting and testing of braking systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes braking components fitted to light vehicle, heavy vehicle, motorcycle and small engine equipment.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to assemble and fit braking system components	<p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5. Technical requirements for work to be performed are sourced and support equipment is identified and prepared</p>
2. Assemble and fit braking system/components	<p>2.1. Braking system component assembly and fitting procedures are completed in accordance with manufacturer/component supplier specifications and tolerances</p> <p>2.2. Legislation, industry guidelines and enterprise policies/procedures are followed</p> <p>2.3. Undue damage to equipment or machinery is avoided</p>
3. Test braking system components and analyse results	<p>3.1. Information for testing is accessed from manufacturer/ component supplier specifications and correctly interpreted</p> <p>3.2. Tests are carried out in accordance with manufacturer/ component supplier specifications and tolerances</p> <p>3.3. Testing is completed without causing damage to any component or system</p> <p>3.4. Test results are analysed against manufacturer/component supplier specifications</p> <p>3.5. Determination is made as to the serviceability of system components</p> <p>3.6. Failed components are tagged for further work</p> <p>3.7. Test results are documented in accordance with workplace requirements</p>
4. Prepare braking system components for use or storage	<p>4.1. Inspection is made to ensure safety features are satisfied</p> <p>4.2. Final inspection is made to ensure work is to workplace expectations</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>4.3.Components are cleaned and/or stored to workplace expectations</p> <p>4.4.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the assembly, fitting and testing of braking systems and associated components, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the documenting/recording of results)

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operating principles different types of braking systems
- construction of different types of braking systems
- types and layout of service/repair manuals (hard copy and electronic)
- assembly procedures and techniques
- fitting procedures and techniques
- braking system testing techniques
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• conducting component assembly fitting and testing in accordance with workplace and manufacturer/ component supplier requirements</li> <li>• interpreting test results</li> <li>• completing assembly and fitting of braking components within workplace timeframes</li> <li>• presentation of components to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the assembly, fitting and testing of braking systems and associated components</li> <li>• equipment, hand and power tooling appropriate to the assembly, fitting and testing of braking systems and associated components</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Braking components**

May include hydraulic, pneumatic over hydraulic, vacuum over hydraulic, electric, electric over hydraulic and pneumatic braking systems

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>WHS</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, cutting equipment, measuring equipment, lifting equipment, brake bleeding

<b>RANGE STATEMENT</b>	
	equipment, testing equipment and pipe bending and flaring equipment
<b>Materials</b>	Materials may include spare parts, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to assembling, fitting and testing of braking systems and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURTTB3006 Inspect, service and repair auxiliary braking systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT310171A Inspect, service and repair auxiliary braking systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to carry out inspection, service and repair of auxiliary braking systems, including engine and exhaust brakes and retarders.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, service and repair of auxiliary braking systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes any vehicle fitted with a speed reducing/control device, such as:</p> <ul style="list-style-type: none"><li>• engine brakes</li><li>• exhaust brakes</li><li>• retarders (hydraulic or electrical).</li></ul> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect auxiliary braking system	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical and/or calibration requirements for inspection are sourced and support equipment is identified and prepared
2. Conduct inspection and analyse results	2.1.Methods for inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is forwarded to persons for action in accordance with workplace procedures
3. Prepare to service and repair auxiliary braking system	3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2.Procedures and information are identified and sourced 3.3.Technical and tool requirements for service and repair are identified and support equipment is identified and prepared
4. Service and repair of auxiliary braking system	4.1.Methods for service and repair are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications 4.2.Service and repair adjustments made during the work are in accordance with manufacturer/component supplier specifications 4.3.Auxiliary brakes are tested for normal operation against manufacturer/component supplier specifications following the service and repair

ELEMENT	PERFORMANCE CRITERIA
5. Prepare auxiliary braking system for delivery to customer or storage	<ul style="list-style-type: none"><li>5.1. Work schedule documentation is completed</li><li>5.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</li><li>5.3. Final inspection is made to ensure work is to workplace expectations</li><li>5.4. Auxiliary brakes are cleared for service or stored to workplace expectations</li><li>5.5. Job card is processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection, service and repair of auxiliary braking systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- importance of the role of auxiliary brakes and the necessity of working within manufacturer/component supplier tolerances and adjustments
- operating principles of engine and exhaust brakes, hydraulic and electrical retarders and their component functions
- types and layout of service/repair manuals (hard copy and electronic)
- service procedures
- repair procedures
- enterprise quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection in accordance with workplace requirements
- interpreting inspection findings
- carrying out service and repair to manufacturer/ component supplier requirements on a minimum of two different systems
- completing service and/or repair of auxiliary braking systems and associated components within workplace timeframes
- auxiliary braking system presentation to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection, service and repair of auxiliary braking systems
- equipment, hand and power tooling appropriate to the

<b>EVIDENCE GUIDE</b>	
	<p>inspection, service and repair of auxiliary braking systems</p> <ul style="list-style-type: none"> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating</p>

**RANGE STATEMENT**

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

**Personal protective equipment**

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

**Safe operating procedures**

Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors

**Emergency procedures**

Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation

**Environmental requirements**

Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management

**Quality requirements**

Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures

**Statutory/regulatory authorities**

Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, specialist tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include spare parts and consumables, fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to inspection, servicing and repair of auxiliary braking systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Brakes
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## AURTTC2001 Inspect and service cooling systems

### Modification History

Release	Comment
Release 1	Replaces AURT202170B Inspect and service cooling systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

<b>Unit descriptor</b>	This unit of competency describes the skills and knowledge required to carry out the inspection and service of air and liquid cooling systems in an automotive retail, service and/or repair context.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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### Application of the Unit

<b>Application of the unit</b>	This unit applies to individuals who undertake inspection, analysis and servicing of cooling systems in light vehicles, heavy vehicles, motorcycles, marine craft and outdoor power equipment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1.Determine job requirements, including method, processes and equipment</li><li>1.2.Read and interpret job specifications</li><li>1.3.Access and interpret information from manufacturer/component supplier specifications and workshop manuals</li><li>1.4.Identify equipment and tooling and check for safe and effective operation</li><li>1.5.Determine procedures to minimise task time</li></ul>
2. Inspect cooling systems and analyse results	<ul style="list-style-type: none"><li>2.1.Observe workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and personal protection needs, throughout the work</li><li>2.2.Observe warnings in relation to working with pressurised cooling systems</li><li>2.3.Perform cooling system inspection in accordance with workplace procedures and manufacturer/component supplier specifications</li><li>2.4.Compare inspection results with manufacturer/component supplier specifications to indicate compliance or non-compliance</li><li>2.5.Document results with evidence and supporting information and make recommendations</li><li>2.6.Process report in accordance with workplace procedures</li></ul>
3. Carry out servicing	<ul style="list-style-type: none"><li>3.1.Carry out servicing and adjustments in accordance with workplace procedures and manufacturer/component supplier specifications</li><li>3.2.Select and use appropriate tooling, techniques and materials</li><li>3.3.Make final inspection to ensure work is to workplace expectations</li></ul>
4. Prepare equipment for use or storage	<ul style="list-style-type: none"><li>4.1.Complete servicing schedule documentation</li><li>4.2.Remove waste and scrap following workplace procedures</li><li>4.3.Clean equipment and work area and inspect for serviceable condition in accordance with workplace procedures</li><li>4.4.Maintain and store tooling and equipment in accordance with workplace procedures</li></ul>

ELEMENT	PERFORMANCE CRITERIA
	4.5.Process job card in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related to the inspection and servicing of cooling systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to apply common industry terminology, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier technical information and specifications, workplace policies and safety procedures
- numeracy skills to the level required to correctly calculate time, complete tests and measurements to determine repair/replacement requirements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity
- organisational skills to the level required to plan and organise activities, including preparation and layout of worksite, and obtaining equipment and materials to avoid backtracking or workflow interruptions

#### Required knowledge

Required knowledge includes:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with coolants
- identification of application, purpose and operating principles
- inspection procedures
- types and layout of service/repair manuals (hard copy and electronic)
- cooling system service procedures
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications

**REQUIRED SKILLS AND KNOWLEDGE**

- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to inspection and servicing of cooling systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to inspection and servicing of cooling systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret analysis results
- identify application, purpose and operating principles
- conduct inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- complete service of cooling systems and associated components within workplace timeframes
- present equipment to customer in compliance with workplace requirements.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of cooling systems and components relevant to the application
  - materials relevant to servicing cooling systems
  - equipment, hand and power tooling appropriate to servicing cooling systems

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Servicing</b>	<p>Servicing is to include:</p> <ul style="list-style-type: none"> <li>• fluids</li> <li>• filters</li> <li>• adjustments</li> <li>• operational testing, visual inspections and</li> </ul>

<b>RANGE STATEMENT</b>	
	documents
<b>Inspection methods</b>	<p>Inspection methods are to include:</p> <ul style="list-style-type: none"> <li>• visual, aural and functional assessments, including, damage, corrosion, fluid levels/leaks and wear</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements include:</p> <ul style="list-style-type: none"> <li>• fluid cooled systems</li> <li>• air cooled systems</li> <li>• combination systems</li> </ul>
<b>System variables</b>	<p>System variables may include:</p> <ul style="list-style-type: none"> <li>• thermostats, water pumps, hoses, ducting, fans, drive belts, heat exchanger, electric and viscous fans, sealed and non-sealed systems, interior heater and coolant heater manifold</li> <li>• cooling fins size, material, colour and finish</li> <li>• ferrous and non-ferrous metals</li> <li>• keel cooling, heat exchanger, raw water cooling and sacrificial anodes</li> <li>• cooling system additives</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• meters, gauges and pressure testing devices</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• coolant</li> <li>• spare parts</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing cooling systems</li> <li>• regulatory/legislative requirements pertaining to servicing cooling systems</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>requirements</p> <ul style="list-style-type: none"> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• electrical safety</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• pollution</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>

RANGE STATEMENT	
Quality requirements	Quality requirements may include: <ul style="list-style-type: none"><li>• regulations, including Australian standards</li><li>• internal organisational quality policies and procedures</li><li>• enterprise operations and procedures</li></ul>
Organisational policies and procedures	Organisational policies and procedures may include: <ul style="list-style-type: none"><li>• quality policies and procedures, including Australian standards</li><li>• WHS, sustainability, environment, equal opportunity and anti-discrimination</li><li>• manufacturer specifications and industry codes of practice</li><li>• safe work procedures</li><li>• reporting and recording procedures</li></ul>

## Unit Sector(s)

Unit sector	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Cooling Systems
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## AURTTC2002 Carry out radiator repairs

### Modification History

Release	Comment
Release 1	Replaces AURT202608A Carry out radiator repairs Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out radiator repairs.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, repairing of radiators and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to undertake radiator repairs</b>	<ul style="list-style-type: none"><li>1.1.Nature and scope of work requirements are identified and confirmed</li><li>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</li><li>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.5.Technical and/or calibration requirements for radiator repairs are sourced and support equipment is identified and prepared</li></ul>
2. <b>Repair radiators and/or components</b>	<ul style="list-style-type: none"><li>2.1.Correct information is accessed and interpreted from manufacturer/component supplier specifications</li><li>2.2.Radiators and/or associated components are repaired using approved methods and equipment, according to manufacturer/component supplier specifications</li><li>2.3.Radiators are repaired without causing damage to any component or system</li></ul>
3. <b>Prepare radiator for installation or use or storage</b>	<ul style="list-style-type: none"><li>3.1.Repairs are documented</li><li>3.2.Final inspection is made to ensure work is completed to workplace requirements</li><li>3.3.Radiator is prepared for use or stored to workplace expectations</li><li>3.4.Job card is processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repairing radiators, including the use of measuring equipment, repair tooling and equipment and communication devices and the reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with heating equipment
- personal safety requirements
- identification of application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- soldering processes

**REQUIRED SKILLS AND KNOWLEDGE**

- repair procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• identification of application, purpose and operation</li> <li>• application of the full repair sequence as per the Range Statement to a radiator relative to the qualification being sought</li> <li>• conducting repair in accordance with workplace and manufacturer/component supplier requirements</li> <li>• radiator is presented to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to repairing radiators</li> <li>• equipment, hand and power tooling appropriate to repairing radiators</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

	<p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Repair methods**

Repair methods are to include pressure testing, tank testing, visual and functional assessments (including corrosion, fluid leaks and wear) welding, soldering, cutting and shaping

**Specific requirements**

Specific requirements include radiators (metal,

<b>RANGE STATEMENT</b>	
	plastic, copper, aluminium, cast)
<b>Faults</b>	<p>Faults may include:</p> <ul style="list-style-type: none"> <li>external coolant leaks</li> <li>engine overheating</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory Authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities

<b>RANGE STATEMENT</b>	
	administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling, welders, soldering equipment, testing equipment, including pressure testers, compressed air, testing tanks, jigs and vices
<b>Materials</b>	Materials may include coolants, minor spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repairing radiators</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Cooling Systems
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## AURTTC3003 Diagnose and repair cooling systems

### Modification History

Release	Comment
Release 1	Replaces AURT202166B Repair cooling systems Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern technologies

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to diagnose and repair cooling systems fitted to vehicles. It involves diagnosing deviations from correct operation, repairing cooling system components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	Work applies to the cooling systems of motorcycles, light vehicles, heavy commercial vehicles, and vehicles in the mining, construction, agricultural and marine environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a cooling system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a cooling system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a cooling system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - interpret gauges and measuring equipment
  - measure and calculate volumes and ratios
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of cooling systems, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing cooling systems
- dangers of working with cooling systems
- operating principles of cooling systems, including:
  - air cooled systems
  - liquid cooled systems
- application, purpose and operation of cooling systems
- testing procedures for cooling systems
- repair procedures for cooling systems
- post-repair testing procedures for cooling systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of cooling systems relative to the qualification being sought
- diagnose and repair cooling systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with cooling system faults relevant to the qualification being sought
- equipment appropriate for the testing of cooling systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of cooling systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• cooling system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of cooling systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b>Diagnostic tests</b> may include:	<ul style="list-style-type: none"> <li>• cooling system pressure test</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• isolation of fault(s)</li> <li>• component inspection and evaluation.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• internal cooling system leaks</li> <li>• external cooling system leaks</li> <li>• cooling system mechanical, electrical or hydraulic component failure.</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including               <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• cooling system pressure test</li> <li>• cooling fan performance testing</li> <li>• interior heater performance testing.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical – Cooling Systems

**Custom Content Section**

Not applicable.

## AURTTD2001 Inspect steering systems

### Modification History

Release	Comment
Release 1	Replaces AURT215130A Inspect steering systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out inspection and testing of steering systems/components and assess their condition (including mechanical and power assisted steering systems) in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence refers to steering systems associated with automotive retail, service and/or repair and should be contextualised to the level of the qualification to which it is being applied.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and testing of steering system/components, assessment of condition of steering system/components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to undertake steering system inspection</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures 1.5. Resources required for steering system inspection are sourced and support equipment is identified and prepared
2. <b>Inspect steering system/components and assess condition</b>	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Inspection of steering systems is carried out in accordance with manufacturer/component supplier specifications for methods, tooling and equipment 2.3. Steering system inspection is completed without causing damage to any component or system 2.4. System/component condition is determined by comparing actual component condition to manufacturer/component supplier specifications for limits/tolerances and to State/Territory legislation regarding vehicle roadworthiness 2.5. Steering system inspection and condition identification activities are carried out according to industry regulations/ guidelines, WHS legislation, legislation and enterprise procedures/policies
3. <b>Prepare vehicle for delivery to customer</b>	3.1. Inspection schedule documentation is completed 3.2. Final inspection is made to ensure work is to workplace expectations 3.3. Vehicle/equipment is presented to customer to workplace expectations 3.4. Workplace documentation is completed 3.5. Job card is processed in accordance with workplace procedures



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interacting effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and testing of steering system/components, including the use of hydraulic equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operating principles of mechanical and power assisted steering system relevant to the qualification to which it is applied
- types and layout of service/repair manuals (hard copy and electronic)
- steering system inspection and testing procedures
- steering system/components condition assessment procedures
- reporting procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• conducting the inspection of a range of steering systems in accordance with the workplace and manufacturer/component supplier requirements</li> <li>• accurately interpreting inspection results</li> <li>• completing inspection of steering system and associated components within workplace timeframes</li> <li>• vehicle/equipment is presented to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the inspection and testing of steering system/components</li> <li>• equipment, hand and power tooling appropriate to the inspection and testing of steering system/components</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

**EVIDENCE GUIDE**

	<p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Steering systems to be inspected**

Steering systems to be inspected may be those in light and heavy vehicle and outdoor power equipment

**Inspection methods**

Inspection methods are to include:

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• road testing, electrical testing</li><li>• visual, aural and functional assessments (including damage, corrosion, wear, leakage, electrical)</li></ul>
<b>Components</b>	Steering system components are to include ball joints, struts, idler arms, steering boxes and columns, electronic controlled systems and two and four wheel steer
	This operation is normally carried out prior to performing a wheel alignment

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, electrical safety, machinery movement and operation, manual lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for removal, testing equipment, vehicle-lifting equipment,

<b>RANGE STATEMENT</b>	
	safety stands, holding equipment, hydraulic testing equipment, multimeter, test light and precision measurement tooling
<b>Materials</b>	Materials may include cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection and testing of steering system/components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Steering and Suspension
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## AURTTD2002 Inspect and service steering systems

### Modification History

Release	Comment
Release 1	Replaces AURT215170A Inspect and service steering systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required carry out the inspection and servicing of wheeled and tracked type steering systems and associated components in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence refers to inspecting and servicing steering systems in an automotive retail, service and/or repair environment and should be contextualised to the level of the qualification to which it is being applied.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and servicing of wheeled and tracked type steering systems and associated components and completion of work finalisation processes, including clean-up and documentation.</p> <p>For bicycle steering service refer to unit AURBTD2001 Service bicycle steering systems.</p> <p>For marine steering service and repair refer to unit AURRTD3001 Diagnose and repair marine steering systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to undertake inspection and servicing of steering systems and related components</b>	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures 1.5.Resources required for inspecting and servicing steering systems are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with wheeled and tracked vehicles are observed
<b>2. Conduct inspection and analyse results</b>	2.1.Inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is forwarded to persons for action in accordance with workplace procedures
<b>3. Carry out servicing</b>	3.1.Servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2.Adjustments, including wheel bearing adjustments are made during the service are in accordance with manufacturer/component supplier specifications
<b>4. Prepare vehicle for customer and/or storage</b>	4.1.Service schedule documentation is completed 4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3.Final inspection is made to ensure work is to workplace expectations 4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations 4.5.Job card is processed in accordance with workplace

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and servicing of steering systems and associated components, including the use of electronic measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled and/or tracked vehicles
- operating principles of mechanical and hydraulic steering systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service procedures

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• enterprise quality procedures</li><li>• work organisation and planning processes</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting service of a range of steering systems in accordance with the workplace and manufacturer/component supplier requirements
- accurately interpreting inspection results
- servicing of steering systems completed within workplace timeframes
- vehicle is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of steering systems and associated components
- equipment, hand and power tooling appropriate to the inspection and servicing of steering systems and associated components
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Steering systems**

Steering systems may be in wheeled and tracked vehicles, light and heavy vehicles, motorcycles and outdoor power equipment

<b>RANGE STATEMENT</b>	
<b>System components</b>	System components for inspection may include wheel bearings, ball joints, rose joints, struts, idler arms, steering boxes and columns, electronic controlled systems, two and four wheel steer and full hydraulic steering, including articulated vehicles and tracked type systems
<b>Methods</b>	Methods are to include visual, aural and functional assessments, including damage, corrosion, wear and electrical
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, electrical safety, machinery movement and operation, manual lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and

<b>RANGE STATEMENT</b>	
	standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, hydraulic testing equipment and devices
<b>Materials</b>	Materials may include lubricants and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection and servicing of wheeled and tracked type steering systems and associated components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURTTD2003 Inspect suspension systems

### Modification History

Release	Comment
Release 1	Replaces AURT216130A Inspect suspension systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out inspection and testing of suspension system and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, testing and assessment of suspension systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence should be contextualised to the qualification to which it is being applied.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to undertake inspection of suspension system</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical requirements for inspection are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with wheeled or tracked equipments are observed
<b>2. Inspect suspension system/components and assess condition</b>	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Inspections of suspension systems are carried out in accordance with manufacturer/component supplier specifications for methods, tooling and equipment 2.3. Suspension system inspection is completed without causing damage to any component or system 2.4. System/component condition is determined by comparing actual component condition to manufacturer/component supplier specifications for limits/tolerances and to State/Territory legislation regarding vehicle roadworthiness 2.5. Suspension system inspection and condition identification activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
<b>3. Prepare vehicle/equipment for delivery to customer</b>	3.1. Inspection schedule documentation is completed 3.2. Final inspection is made to ensure work is to workplace expectations 3.3. Vehicle/equipment is presented to customer to workplace expectations 3.4. Workplace documentation is completed and dealt with relevant to inspection outcomes 3.5. Job card is processed in accordance with workplace

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection of suspension systems, including the use of measuring equipment, computerised technology, specialist tooling and testing devices communication devices, the reporting/documenting of results and diagnostic and specialised tooling and equipment

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operating principles of suspension system relative to the qualification being applied
- types and layout of service/repair manuals (hard copy and electronic)
- suspension system inspection and testing procedures
- suspension system/components condition assessment procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection, testing and assessment in accordance with workplace and manufacturer/ component supplier requirements
- completing inspection of suspension system and associated components within workplace timeframes
- vehicle/equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection of suspension systems
- equipment, hand and power tooling appropriate to the inspection of suspension systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Suspension systems</b>	Suspension systems are those on light and heavy vehicles
<b>Systems</b>	Systems may include lateral and longitudinal arms, ball joints, self-levelling devices, ride control and height control
<b>Inspection methods</b>	Inspection methods are to include: <ul style="list-style-type: none"> <li>functional testing/road testing, pressure testing, measurement</li> <li>visual, aural and functional assessments (including damage, corrosion, leakage, wear)</li> </ul>
<b>Inspection</b>	Inspection is normally carried out prior to performing a wheel alignment
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors

<b>RANGE STATEMENT</b>	
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand and power tooling, lifting equipment, safety stands and supporting equipment, measuring equipment and specialist tooling and testing equipment
<b>Materials</b>	Materials may include cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection of suspension systems</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURTTD2004 Inspect and service suspension systems

### Modification History

Release	Comment
Release 1	Replaces AURT216170A Inspect and service suspension systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the service of suspension systems and associated components in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis and servicing of suspension systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence refers to servicing suspension systems in an automotive retail, service and/or repair environment and should be contextualised to the level of the qualification to which it is being applied.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to inspect and service suspension systems and associated components</b>	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures</p> <p>1.5.Resources required for servicing suspension systems are sourced and support equipment and tooling are identified and prepared</p> <p>1.6.Warnings in relation to working with wheeled and/or tracked equipment are observed</p>
2. <b>Conduct inspection and analysis</b>	<p>2.1.Inspection is implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. <b>Carry out service</b>	<p>3.1.Service are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.Adjustments made during the service are in accordance with manufacturer/component supplier specifications</p>
4. <b>Prepare vehicle/equipment for use or storage</b>	<p>4.1.Service schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and service of suspension systems, including the use of measuring equipment, computerised technology, specialist tooling and testing devices communication devices, the reporting/documenting of results and diagnostic and specialised tooling and equipment

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operating principles of suspension systems relevant to the qualification to which it is applied
- dangers of working with stored energy
- types and layout of service/repair manuals (hard copy and electronic)
- suspension system servicing procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- suspension system testing procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the inspection and servicing a range of suspension systems in accordance with workplace and manufacturer/component supplier requirements
- accurately interpreting test results
- completing service of suspension system and associated components within workplace timeframes
- vehicle/equipment is presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of suspension systems
- equipment, hand and power tooling appropriate to the inspection and servicing of suspension systems
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### **Suspension systems**

Suspension systems may be gas, hydraulic, pneumatic, mechanical and rubber suspension, and found on light and heavy vehicles, trailers, motorcycles and outdoor power equipment

#### **Systems**

Systems may include lateral and longitudinal arms, independent suspension, ball joints, rose joints, self levelling device, ride control, height control and tracked type systems

#### **Methods**

Methods are to include:

- functional testing, pressure testing, measurement
- visual, aural and functional assessments (including damage, corrosion, leakage, wear)
- adjustment of shock absorbers

#### **WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### **Personal protective equipment**

Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices

#### **Safe operating procedures**

Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, machinery movement and operation, manual lifting and shifting, working in proximity to

<b>RANGE STATEMENT</b>	
	others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, lifting equipment, safety stands and supporting equipment, measuring equipment, power tooling and testing equipment
<b>Materials</b>	Materials may include spare parts, lubricants and fluids and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection and servicing of suspension systems</li> <li>• regulatory/legislative requirements pertaining</li> </ul>

**RANGE STATEMENT**

	<p>to the automotive industry, including Australian Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURTTD4005 Overhaul steering system components

### Modification History

Release	Comment
Release 1	Replaces AURT415145A Overhaul steering system components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out an overhaul of steering system components, including mechanical and power assisted components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of the work requirement, preparation for work, testing and analysis of steering system components, dismantling, assembling, inspection, adjusting and preparation of the steering system and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake overhaul of steering system components	1.1.Nature and scope of the work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical and/or calibration requirements for overhaul are sourced and support equipment is identified and prepared
2. Test steering system and analyse results	2.1.Methods for the conduct of the system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is processed in accordance with workplace procedures
3. Overhaul steering systems and/or associated components	3.1.Information is accessed and interpreted from manufacturer/component supplier specifications 3.2.Overhaul and/or replacements to faulty steering systems are carried out in accordance with manufacturer/ component supplier specifications for methods, equipment and tolerances 3.3.Steering systems overhaul is completed without causing damage to any component or system 3.4.All steering systems overhaul, removal/replacement activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
4. Prepare components for use or storage	4.1.Overhaul schedule documentation is completed 4.2.Final inspection is made to ensure work is to workplace expectations 4.3.Components are presented for use or stored to

ELEMENT	PERFORMANCE CRITERIA
	workplace expectations 4.4.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the overhaul of steering system components, including the use of measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- the principles of gearing as applied to the steering systems
- types and layout of service/repair manuals (hard copy and electronic)
- steering systems overhaul procedures
- component repair and adjustment procedures
- manual handling procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting test results
- conducting the overhaul in accordance with workplace and manufacturer/component supplier requirements
- completing overhaul of a range of significant steering system components within workplace timeframes

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the overhaul of steering system components
- equipment, hand and power tooling appropriate to the overhaul of steering system components
- activities covering the mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment

**EVIDENCE GUIDE**

guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions (real or simulated) and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Steering system components</b>	Steering system components may be in light vehicles, heavy vehicles, including articulated, tracked and wheeled type vehicles and include mechanical steering boxes, power-assisted steering boxes and full power steering assemblies
<b>Steering components</b>	Steering components may include pumps, orbital valves, valves and actuators
<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting,

<b>RANGE STATEMENT</b>	
	working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for dismantling/assembling/ adjustment, testing equipment, hydraulic pressure testers, multimeters, test lights and precision measurement tooling
<b>Materials</b>	Materials may include steering components, spare parts, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the overhaul</li> </ul>

**RANGE STATEMENT**

	<p>of steering system components</p> <ul style="list-style-type: none"><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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## AURTTE1003 Remove and tag engine system components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT100064A Remove and tag engine system components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to remove and tag engine system components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work involves includes engine systems from light vehicles, motorcycles, heavy vehicles road transport, heavy vehicles mobile plant, outdoor power equipment and marine craft.</p> <p>Methods include tagging by title and application.</p> <p>Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to remove and tag engine system components</b>	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Dangers associated working with the removal and tagging of engine components are observed</p>
2. <b>Remove engine system components</b>	<p>2.1.Engine system components for removal are identified</p> <p>2.2.Methods for the removal and tagging are implemented in accordance with manufacturer/component supplier specifications</p> <p>2.3.Components are removed without damage</p> <p>2.4.Inspection of components is carried out</p> <p>2.5.Report is processed in accordance with workplace procedures</p>
3. <b>Tag engine system components</b>	<p>3.1.Tagging procedures are identified</p> <p>3.2.Resource requirements for tagging are identified and support equipment is identified and prepared</p> <p>3.3.Components are tagged without damage</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- Apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removing and tagging engine system components, including use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- engine system terminology
- function of each component
- relationship of components to each other
- application of components
- removal procedures
- tagging procedures
- quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, removing and tagging a range of components by their title and application
- conducting removal and tagging without damage to components or tooling and equipment

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated automotive site

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to removing and tagging engine system components
- equipment, hand and power tooling appropriate to removing and tagging engine system components
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment are may include hand tooling and hand-held power tooling
<b>Materials</b>	Materials may include tags and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets and Australian Design Rules</li><li>• safe work procedures related to removing and tagging engine system components</li><li>• organisation work specifications and requirements</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## AURTTE2004 Inspect and service engines

### Modification History

Release	Comment
Release 1	Replaces AURT201170A Inspect and service engines Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the inspection and service of two and four stroke spark ignition and two and four stroke compression ignition engines.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and servicing of engines and completion of work finalisation processes, including clean-up and documentation.</p> <p>For service of outdoor power equipment engines and associated components see AURPTE2002 Service engines and associated engine components (outdoor power equipment).</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake the inspection of engines	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures</p> <p>1.5.Resources required for inspection of engine systems are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with engine systems are observed</p>
2. Conduct engine system inspections and analyse results	<p>2.1.Engine systems inspections are implemented in accordance with workplace procedures and manufacturer/component supplier specifications for engine servicing</p> <p>2.2.Engines are started and run up to operating temperature and inspected for leaks, abnormal noises and pressures</p> <p>2.3.Analysis results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.4.Results are documented with evidence and supporting information and recommendation(s) are made</p> <p>2.5.Report is processed in accordance with workplace procedures</p>
3. Prepare to service engines	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information required are identified and sourced</p> <p>3.3.Resources required for servicing are identified and support equipment is identified and prepared</p>
4. Carry out servicing	<p>4.1.Service is implemented in accordance with workplace procedures and manufacturer/component</p>

ELEMENT	PERFORMANCE CRITERIA
	supplier specifications 4.2.Adjustments made during the service are in accordance with manufacturer/component supplier specifications
5. Prepare vehicle for use or storage	5.1.Servicing schedule documentation is completed 5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 5.3.Final inspection is made to ensure work is to workplace expectations 5.4.Vehicle is cleaned for use or storage to workplace expectations 5.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to inspection and servicing of engines, including the use of tooling, manual and computerised, measuring equipment, servicing tooling and equipment and communication devices and the reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- National Environmental Protection Measures for Diesel Vehicles as applicable to tasks
- dangers of working with engines
- operating principles of engines, lubrication, cooling and fuel systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)

**REQUIRED SKILLS AND KNOWLEDGE**

- inspection procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately inspecting and documenting and interpreting analysis results
- conducting inspection and servicing of a range of engines in accordance with workplace and manufacturer/component supplier requirements and specifications
- completing the work within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of engines
- equipment, hand and power tooling appropriate to the inspection and servicing of engines
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Inspection and servicing of engines**

- Inspection and servicing of engines includes the assessment and adjustment/replacement of components in accordance with specifications including those associated with light vehicles, heavy vehicles, motorcycle and marine craft

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>It includes four stroke spark ignition, two stroke spark ignition and four stroke compression ignition</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, manual lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load testing devices and oil sample analysis equipment

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Material may include oils, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to inspection and servicing of engines</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• Instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
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## AURTTE3001 Apply knowledge of engine science

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	This unit describes the performance outcomes required to apply knowledge of engine components and systems.  No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.
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### Application of the Unit

<b>Application of the unit</b>	Work applies to everyday engine reconditioning activities and is carried out according to award provisions.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

### Pre-Requisites

Not applicable.

### Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply relevant information of engine construction and operation to work activities	<p>1.1.<b><i>Components</i></b> of an engine are identified during reconditioning activities</p> <p>1.2.Functions of engine components are identified during reconditioning activities</p> <p>1.3.<b><i>Relationships</i></b> between engine components are identified during reconditioning activities</p> <p>1.4.Engine configurations are identified during reconditioning activities</p>
2. Apply relevant information of engine diagnosis to work activities	<p>2.1.Using knowledge of engine diagnosis, causes of engine component wear or failure are identified during reconditioning activities</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to use diagnostic equipment
- literacy skills to read and interpret written technical information
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- numeracy skills to use mathematical ideas and techniques to calculate distances, areas, volumes, power and torque
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - follow workplace documentation, such as codes of practice and operating procedures
  - select and use appropriate equipment, materials, processes and procedures

### Required knowledge

- classifications of engines, including:
  - internal and external combustion
  - rotary and reciprocating engines
  - spark ignition and compression ignition engines
  - engine cylinder arrangements
- engine configurations, including:
  - inline engines, vee-type engines and slant cylinder engines
  - opposed cylinder engines
- camshaft and valve locations, including:
  - overhead cam (OHC)
  - overhead valve (OHV)
- engine operating principles, including:
  - combustion, including:
    - air-fuel ratios and flame propagation
    - direct and indirect fuel injection
    - detonation and pre-ignition
  - two-stroke and four-stroke cycles
- engine measurement and performance, including:
  - bore and stroke, including:
    - oversquare and undersquare engines
    - crank throw
  - swept volume and engine volume

- compression ratio
- engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
- torque and horsepower, including brake horsepower
- construction and operation of petrol engines, including:
  - basic metallurgy relating to engines
  - identification of metric and imperial threads
  - engine components, including cylinder blocks, cylinders, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, spark plugs, connecting rods, crankshafts, piston rings, gudgeon pins, camshafts, cams and flywheels
- combustion chambers, including:
  - L-head, bath-tub, wedge, trapezoidal, hemispherical and heron-type shapes
  - multiple valve designs
- construction and operation of diesel engines, including:
  - direct and indirect injection
  - swirl chambers
  - pre-combustion chambers
- engine diagnosis, including:
  - wet and dry compression tests
  - cylinder leakage tests
  - cylinder power balance tests
  - vacuum tests
  - oil pressure tests
  - sources of fluid leaks
  - exhaust smoke diagnosis
- engine noise diagnosis, including identifying:
  - common engine noises
  - common abnormal combustion noises

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• engine components</li> <li>• engine layouts</li> <li>• operating principles of a range of engine types</li> <li>• common diagnosis procedures.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• a range of engine types and configurations.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of</p>

## Evidence Guide

	<p>workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>
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## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Components</i></b> may include	<ul style="list-style-type: none"> <li>• components of a rotary engine</li> <li>• components of a spark ignition or compression ignition engine.</li> </ul>
<b><i>Relationships</i></b> may include	<ul style="list-style-type: none"> <li>• where a component has an effect on another component, such as piston to connecting rod to crankshaft to flywheel.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical Miscellaneous
<b>Sector</b>	Technical - Engines

## Custom Content Section

Not applicable.

## AURTTE4005 Overhaul engines and associated engine components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT401145A Overhaul engines and associated engine components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to overhaul engines and associated engine components on an engine removed from its chassis.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, dismantling of engines, repair, assembly and final checking of engines and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence should be contextualised to the qualification it is being applied.</p> <p>For overhaul of outdoor power equipment engines and associated components see AURPTE4004 Overhaul engines and associated engine components (outdoor power equipment).</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to carry out engine overhaul	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks</p> <p>1.4.Technical and tooling requirements for overhaul are identified and support equipment is identified and prepared</p> <p>1.5.SWL rating of lifting devices, engine cradles, slings and shackles is confirmed against the load to be lifted</p>
2. Dismantle engine and components	<p>2.1.Engine is dismantled in a logical sequence</p> <p>2.2.Dismantling of engine and relevant components is completed without causing damage to any component or system</p> <p>2.3.Components are cleaned ready for inspection</p>
3. Overhaul engine components	<p>3.1.Information is accessed and interpreted from manufacturer/component supplier specifications and repair/reclaim methods</p> <p>3.2.Components are measured and compared against manufacturer/component supplier specifications and tolerances</p> <p>3.3.Decisions are made as to serviceability and repair method of each component</p> <p>3.4.Replacement parts are sourced</p> <p>3.5.Rebuild or replacement of engine and/or engine components is carried out in accordance with manufacturer/component supplier specifications and tolerances</p> <p>3.6.Overhaul activities are carried out according to industry regulations/guidelines, WHS legislation and enterprise procedures/policies</p>
4. Assemble engine and components	<p>4.1.Engine is assembled following manufacturer/component supplier procedures</p> <p>4.2.Running clearances are measured against manufacturer/component supplier specifications and necessary adjustments are made</p> <p>4.3.Assembly of engine is are completed within</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>established industry guidelines and timeframes</p> <p>4.4.Assembly is completed without causing damage to any component or system</p>
5. Check engine operation	<p>5.1.Engine is securely mounted in preparation for starting</p> <p>5.2.Engine fluid levels, including lubrication and coolant are checked</p> <p>5.3.Gauges and warning devices are checked for operation prior to starting</p> <p>5.4.Engine is started and checked for leaks and abnormal noises</p>
6. Prepare engine for delivery to customer or installation	<p>6.1.Engine orifices are sealed against ingress of foreign matter</p> <p>6.2.Work completion documentation is finalised and processed to appropriate persons</p> <p>6.3.Final inspection is made to ensure protective features are in place</p> <p>6.4.Engine is cleaned to workplace expectations</p> <p>6.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to overhaul of engines, including use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- types, characteristics and operating processes of engines
- types and layout of service/repair manuals (hard copy and electronic)
- engine overhaul procedures
- dismantling, assembling and adjustment methods
- measuring and testing procedures
- relevant technical information
- component safety requirements
- relevant enterprise policies

**REQUIRED SKILLS AND KNOWLEDGE**

- manual handling techniques

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- dismantling, evaluating, assembling, adjustment, measuring and testing engines in accordance with workplace and manufacturer/component supplier requirements
- completing overhaul of a range of engines and associated components within workplace guidelines and timeframes
- engine presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the overhaul of engines
- equipment, hand and power tooling appropriate to the overhaul of engines
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions (real or simulated) and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>RANGE STATEMENT</b>	
<b>Engines</b>	<p>Engines may be:</p> <ul style="list-style-type: none"> <li>• 4-stroke spark ignition engines for light vehicles, motorcycles and marine craft</li> <li>• 2-stroke spark ignition for motorcycles and marine craft</li> <li>• 4-stroke compression ignition engines for light vehicles, heavy vehicles, mobile plant and marine craft</li> <li>• 2-stroke compression ignition for heavy vehicles, mobile plant and marine craft</li> </ul>
<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid

<b>RANGE STATEMENT</b>	
	requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, lifting and jacking equipment, specialist tooling, measuring equipment and tensioning equipment
<b>Materials</b>	Materials may include engine oils, moving parts lubricants, replacement parts, gaskets, sealants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the overhaul of engines</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Engines
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## AURTTF2001 Service petrol fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT203170B Service petrol fuel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out servicing on mechanical and basic electric/electronic petrol fuel system/ components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, servicing of petrol fuel system components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to service petrol fuel system components</b>	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures 1.5.Resources required for servicing are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with petrol are observed
<b>2. Service petrol fuel system components</b>	2.1.Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2.Service of petrol fuel system/components are carried out in accordance with manufacturer/component supplier specifications 2.3.Petrol fuel system components service is completed without causing damage to any component or system 2.4.Adjustments made during the service are in accordance with manufacturer/component supplier specifications 2.5.Engine is run and petrol fuel system tested for correct operation
<b>3. Prepare fuel system for normal operation</b>	3.1.Service schedule documentation is completed 3.2.Final inspection is made to ensure safety features are in place 3.3.Final inspection is made to ensure work is to workplace expectations 3.4.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with petrol
- mechanical and electronic fuel systems
- service procedures
- vehicle safety procedures
- types and layout of service/repair manuals (hard copy and electronic)
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is the ability to transfer the competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting the service schedules
- conducting the service of a range of petrol fuel systems in accordance with workplace and manufacturer/component supplier requirements
- completing work in the agreed timeframe
- completing workplace/equipment documentation

##### Context of, and specific resources for assessment

Application of competence is to be assessed in workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to servicing petrol fuel systems
- equipment, hand and power tooling appropriate to servicing petrol fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE**

	<p>Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Servicing procedures**

Servicing procedures may be performed on petrol fuel systems in light vehicles, heavy vehicles, motorcycles, marine engines and outdoor power

<b>RANGE STATEMENT</b>	
	equipment
<b>Systems</b>	Systems may be two stroke and/or four stroke, spark ignition fuel systems
<b>Fuel system components</b>	Fuel system components are to include basic EFI and/or carburettors (all positions, electronic, fixed venturi, variable venturi), such as mechanical and/or electrical fuel pumps, engine shutdown systems and electronic/mechanical fuel injectors, fuel filters and associated basic fuel injection components.
<b>Methods</b>	Methods are to include aural, visual and functional assessments (including damage, corrosion, fluid leaks, wear and safety aspects)
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, electrical safety, manual lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and

<b>RANGE STATEMENT</b>	
	clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, exhaust gas analyser, vacuum gauge, pressure gauge tachometer and multimeter
<b>Materials</b>	Materials may include oils and lubricants, minor spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to servicing petrol fuel systems</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Fuel Systems
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## AURTTF2002 Service diesel fuel injection systems

### Modification History

Release	Comment
Release 1	Replaces AURT203670B Service diesel fuel injection systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to service diesel fuel injection systems and components in an automotive retail, service and/or repair context.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake servicing of diesel fuel injection systems and completion of work finalisation processes, including clean-up and documentation.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to service diesel fuel system components	1.1.Determine job requirements, including method, processes and equipment 1.2.Read and interpret job specifications 1.3.Access and interpret information from manufacturer/component supplier specifications and workshop manuals 1.4.Identify and prepare equipment, resources and tooling and check for safe and effective operation 1.5.Determine procedures to minimise task time
2. Carry out service	2.1.Observe workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and warnings, in relation to working with diesel fuel injection systems throughout the work 2.2.Observe National Environmental Protection Measures for Diesel Vehicles (Guidelines) throughout the work, as applicable to tasks 2.3.Perform service in accordance with workplace procedures and manufacturer/component supplier specifications 2.4.Select and use appropriate tooling, techniques and materials 2.5.Make adjustments in accordance with manufacturer/component supplier specifications
3. Prepare equipment/ engine for use or storage	3.1.Complete servicing schedule documentation 3.2.Make final inspection to ensure work is to workplace expectations 3.3.Remove waste and scrap following workplace procedures 3.4.Clean equipment and work area in accordance with workplace procedures 3.5.Maintain and store tooling and equipment in accordance with workplace procedures 3.6.Process job card in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to use workplace technology and tools related servicing diesel fuel injection systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to apply common industry terminology, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier technical information and specifications, workplace policies and safety procedures
- numeracy skills to the level required to correctly calculate time, complete tests and measurements to determine repair/replacement requirements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity
- organisational skills to the level required to plan and organise activities, including preparation and layout of worksite, and obtaining equipment and materials to avoid backtracking or workflow interruptions

#### Required knowledge

Required knowledge includes:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- National Environmental Protection Measures for Diesel Vehicles (Guidelines)
- dangers of working with diesel fuel injection systems
- identification of application, purpose and operating principles
- types and layout of service/repair manuals (hard copy and electronic)
- engine starting procedures
- bleeding procedures
- selection, checking and use of tooling and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS and environment, relevant to servicing diesel fuel injection systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing diesel fuel injection systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- identify application, purpose and operating principles
- conduct inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- complete service of diesel fuel system and associated components within workplace timeframes.

#### Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
  - a range of diesel fuel injection and components relevant to the application
  - materials relevant to servicing diesel fuel injection systems
  - equipment, hand and power tooling appropriate to servicing diesel fuel injection systems
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment**

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Servicing**

Servicing is to include:

- fluids
- filters
- adjustments and operational testing
- visual inspections and documents
- injector (pop) testing

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• spill timing</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• gauges</li> <li>• calibration and pressure testing equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• lubricants</li> <li>• spare parts</li> <li>• cleaning materials</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to servicing diesel fuel injection systems</li> <li>• regulatory/legislative requirements pertaining to servicing diesel fuel injection systems</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• electrical safety</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>

**RANGE STATEMENT****Legislative requirements**

Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Australian standards
- Australian Design Rules
- Environment Protection Regulations (Diesel Fuels)
- National Environment Protection Measures for Diesel Vehicles (Guidelines)
- confidentiality and privacy
- WHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care

**Environmental requirements**

Environmental requirements may include:

- waste management
- pollution
- noise
- dust
- clean-up management

**Quality requirements**

Quality requirements may include:

- regulations, including Australian standards
- internal organisational quality policies and procedures
- enterprise operations and procedures

**Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures

**RANGE STATEMENT**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• reporting and recording procedures</li></ul> |
|--|--|

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Fuel Systems
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## AURTTF3004 Repair diesel fuel injection systems

### Modification History

Release	Comment
Release 1	Replaces AURT303666A Repair diesel fuel systems Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out repairs, including removal and replacement of diesel fuel systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal, inspection and testing of diesel fuel components, repair and replacement of diesel fuel system components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to repair diesel fuel system components	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.Underpinning principles of diesel fuel system operations, including air fuel ratios and atomisation are explained and observed</p> <p>1.3.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.4.National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks</p> <p>1.5.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.6.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.7.Technical and/or calibration requirements for repair of diesel fuel systems are sourced and support equipment is identified and prepared</p> <p>1.8.Warnings in relation to working with diesel fuel systems are observed</p>
2. Test fuel systems and analyse results	<p>2.1.Methods for conducting tests are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>2.2.Component test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Repair fuel system	<p>3.1.Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.Diesel fuel system adjustments made during the engine operation are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle/ equipment for use or storage	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the repair of diesel fuel systems, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- organisation and planning processes
- the identification of application, purpose and operation
- the identification of component parts to include physical, fluid, gases and heat generation
- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a diesel fuel system relative to the qualification being sought
- conducting repair on a range of diesel fuel systems in accordance with workplace and manufacturer/ component supplier requirements
- interpreting analysis and test results
- completing repair of diesel fuel system and associated components within workplace timeframes

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of diesel fuel systems
- equipment, hand and power tooling appropriate to the repair of diesel fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Repair methods and sequence**

Repair methods and sequence are to include isolation of fault(s), dismantling, inspection and evaluation, replacement of components parts, assembly and completion of operational tests and

<b>RANGE STATEMENT</b>	
	records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load testing devices, calibration

RANGE STATEMENT	
	and pressure testing equipment
<b>Materials</b>	Materials may include diesel fuels, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the repair of diesel fuel systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Fuel Systems
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## AURTTF3005 Inspect and repair engine forced induction systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT305671A Inspect and repair engine forced induction systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to inspect, repair or replace engine turbocharger or supercharging forced induction systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection of systems and analysis of results, repair and replacement of systems and components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect engine forced induction system	<p>1.1. Nature and scope of work requirements are identified and confirmed</p> <p>1.2. Effects of vehicle emission on the environment are explained and understood</p> <p>1.3. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.4. Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.5. Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6. Technical and/or calibration requirements for inspection of forced induction systems are sourced and support equipment is identified and prepared</p> <p>1.7. Warnings in relation to working with forced induction systems are observed</p>
2. Conduct inspections and analyse results	<p>2.1. Methods for inspections are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>2.2. Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3. Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4. Report is processed in accordance with workplace procedures</p>
3. Prepare to repair/replace engine forced induction systems	<p>3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2. Procedures and information are identified and sourced</p> <p>3.3. Technical and tool requirements for repair and replacement are identified and support equipment is identified and prepared</p>
4. Carry out repair/ replacement of forced induction systems	<p>4.1. Methods for repair/replacement are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>4.2. Adjustments made during repair/replacement are in accordance with manufacturer/component supplier</p>

ELEMENT	PERFORMANCE CRITERIA
	specifications
5. Prepare vehicle/engine for use or storage	5.1.Documentation is completed 5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 5.3.Final inspection is made to ensure work is to workplace expectations 5.4.Vehicle/engine is cleaned for use or storage to workplace expectations 5.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to inspection, repair/ replacement of engine forced inductions systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with forced induction systems
- operating principles of forced induction systems and components and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- replacement procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• interpreting of test results</li> <li>• conducting inspection, repair and replacement of a range of engine forced induction systems and associated components in accordance with workplace and manufacturer/component supplier requirements</li> <li>• completing work within workplace timeframes</li> <li>• vehicle/engine presentation to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the inspection, repair/replacement of engine forced induction systems</li> <li>• equipment, hand and power tooling appropriate to the inspection, repair and replacement of engine forced induction systems</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include spare parts, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault

**RANGE STATEMENT**

	documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to inspection, repair/ replacement of engine forced induction systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Fuel Systems
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## AURTTF3006 Diagnose and repair petrol carburettor systems

### Modification History

Release	Comment
Release 1	Replaces AURT303166B Repair petrol fuel systems Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect carburettor technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair carburettor systems fitted to vehicles. It involves diagnosing deviations from correct operation, repairing carburettor components and associated systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the carburettor systems of motorcycles, light vehicles, heavy commercial vehicles, and vehicles in the mining, construction, agricultural and marine environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a petrol carburettor system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a petrol carburettor system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a petrol carburettor system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
- understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - measure and calculate length, area and volume
  - interpret instruments, gauges and other measuring equipment
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of carburettor systems, including the use of:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- specialised tools and equipment
- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing carburettor systems
- dangers of working with petrol
- operating principles of carburation
- application, purpose and operation of carburettor systems
- testing procedures of carburettor systems
- repair procedures of carburettor systems
- post-repair testing procedures of carburettor systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair at least one type of variable venturi carburettor
- diagnose and repair at least one type of multi-barrel carburettor
- diagnose and repair carburettor systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with carburettor faults relevant to the qualification being sought

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- equipment appropriate for the testing of carburettor systems
- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of vehicle carburettor systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• petrol carburettor system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of carburettor systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• motorcycle service requirements and repair manuals.</li> </ul>
<b>Diagnostic tests</b> must	<ul style="list-style-type: none"> <li>• cold-start enrichment inspection</li> <li>• cold and hot engine exhaust gas analysis</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>include:</b>	<ul style="list-style-type: none"> <li>• visual inspection of linkages and shafts.</li> </ul>
<b><i>Diagnostic tests</i> may include:</b>	<ul style="list-style-type: none"> <li>• associated component inspection and evaluation</li> <li>• fuel pump pressure, vacuum and flow tests</li> <li>• testing for air leaks</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Faults</i> may include:</b>	<ul style="list-style-type: none"> <li>• rough running</li> <li>• poor performance</li> <li>• excessive fuel consumption</li> <li>• excessive emissions (particulates, hydrocarbons, carbon monoxide, oxides of nitrogen).</li> </ul>
<b><i>Repair options</i> may include:</b>	<ul style="list-style-type: none"> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i> must include:</b>	<ul style="list-style-type: none"> <li>• cold-start enrichment operation</li> <li>• exhaust gas analysis.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical – Fuel System

**Custom Content Section**

Not applicable.

## AURTTF4003 Overhaul diesel fuel injection systems

### Modification History

Release	Comment
Release 1	Replaces AURT403645A Overhaul diesel fuel injection systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to overhaul of diesel fuel injection system.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of the work requirement, preparation for work, testing and analysis of the system, overhaul of the system and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes all types of diesel fuel systems.</p> <p>These skills are usually acquired when working under the direction of a diesel fuel system specialist in pressurised dust-free facilities</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake the overhaul of diesel fuel injection system components	<p>1.1. Nature and scope of the work requirements are identified and confirmed</p> <p>1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3. National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks</p> <p>1.4. Procedures and information such as workshop manuals, specifications and tooling, are sourced</p> <p>1.5. Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6. Technical and/or calibration requirements for the testing and overhaul of diesel fuel injection systems are sourced and support equipment is identified and prepared</p> <p>1.7. Warnings in relation to working with diesel fuels are observed</p>
2. Test diesel fuel injection systems	<p>2.1. Methods for conducting diesel fuel system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2. Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3. Results are documented with evidence and supporting information and recommendations made</p> <p>2.4. Report is forwarded to appropriate persons for action in accordance with workplace procedures</p>
3. Overhaul diesel fuel injection systems	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications</p> <p>3.2. Overhaul of diesel fuel injection system components is carried out in accordance with manufacturer/component supplier specifications</p> <p>3.3. Diesel fuel injection system component overhaul is completed without causing damage to any component or system</p>
4. Prepare vehicle/system for customer and/or	<p>4.1. Work schedule documentation is completed</p> <p>4.2. Final inspection is made to ensure protective guards,</p>

ELEMENT	PERFORMANCE CRITERIA
storage	<p>safety features and cowlings are in place</p> <p>4.3. Final inspection is made to ensure work is to workplace expectations</p> <p>4.4. Vehicle fuel system and/or components are cleaned and/or stored to workplace expectations</p> <p>4.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the overhaul of diesel fuel injection systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- National Environment Protection Measure for Diesel Vehicles
- dangers of working with diesel fuel testing equipment
- operating principles of diesel fuel systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- calibration and phasing procedures
- enterprise quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- identification of the application, purpose and operation
- application of the full overhaul sequence as per the Range Statement relative to the qualification being sought
- completing preparatory activity in a systematic manner, including the ability to test and analyse diesel fuel system faults
- interpreting the test results
- conducting the overhaul in accordance with workplace and manufacturer/component supplier requirements
- completing overhaul of diesel fuel system and associated components within workplace timeframes
- vehicle/system presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• materials relevant to the overhaul of diesel fuel injection systems</li> <li>• equipment, hand and power tooling appropriate to the overhaul of diesel fuel injection systems</li> <li>• activities covering the mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management

<b>RANGE STATEMENT</b>	
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, pressure testing calibration equipment and devices
<b>Materials</b>	Materials may include spare parts, fuel and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the overhaul of diesel fuel injection systems</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection for Diesel Vehicle Guidelines</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Fuel Systems
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## AURTTF4007 Overhaul petrol fuel system components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT403145B Overhaul petrol fuel system components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to overhaul mechanical and/or electric carburettor petrol and basic electronic fuel system components, such as carburettors, mechanical and electrical fuel pumps, and petrol fuel injectors.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing, analysis and overhaul of the system, and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence should be contextualised to the qualification it is being applied.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul petrol fuel system components	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for overhaul are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with petrol are observed</p>
2. Test petrol fuel system components and analyse results	<p>2.1.Methods for conduct of the system test are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendations made</p> <p>2.4.Report is forwarded to appropriate persons for action in accordance with workplace procedures</p>
3. Overhaul petrol fuel system components	<p>3.1.Information is accessed and interpreted from manufacturer/component supplier specifications</p> <p>3.2.Overhaul of fuel system components is carried out in accordance with manufacturer/component supplier specifications</p> <p>3.3.Petrol fuel system component overhaul is completed without causing damage to any component or system</p>
4. Prepare fuel system for normal service	<p>4.1.Overhaul work schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure work is to workplace expectations</p> <p>4.3.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to overhaul of petrol fuel system components, including use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with petrol
- operating principles of carburettors and fuel pumps
- types and layout of service/repair manuals (hard copy and electronic)
- overhaul procedures
- test procedures
- Australian Design Rules
- enterprise quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting test results/readings
- conducting the overhaul of a range of petrol fuel system components in accordance with workplace and manufacturer/component supplier requirements
- completing overhaul of fuel system components within workplace timeframes
- fuel system presentation in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the overhaul of petrol fuel system components
- equipment, hand and power tooling appropriate to the overhaul of petrol fuel system components
- activities covering the mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions (real or simulated) and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>RANGE STATEMENT</b>	
<b>Petrol fuel systems</b>	Petrol fuel systems may be in light vehicles, heavy vehicles, motorcycles, marine engines, small engines and outdoor power equipment
<b>Systems</b>	Systems may be two-stroke and/or four-stroke and spark ignition fuel systems
<b>Fuel system components</b>	Fuel system components are to include basic EFI components and/or carburettors (all positions, electronic, fixed venturi, variable venturi), fuel pumps, mechanical and electrical, and engine shutdown systems
<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment,

<b>RANGE STATEMENT</b>	
	extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and cleanup management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering the acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for disassembly/assembly and adjustment, and testing equipment, including hand held meters, computer testers, engine analysers, fuel pump testers and pressure testers
<b>Materials</b>	Materials may include spare parts, fuel and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the overhaul of petrol fuel system components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Fuel Systems
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## AURTTJ2001 Balance wheels and tyres

### Modification History

Release	Comment
Release 1	Replaces AURT217606A Balance wheels and tyres Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to balance wheels and tyres.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and analysis of wheel balance, balancing of wheels and tyres and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved may include light vehicles, heavy vehicles, motorcycles and trailers.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to balance wheels and tyres</b>	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical and/or operational requirements for balancing are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with balancing equipment are observed
2. <b>Conduct inspection and analyse results</b>	2.1.Methods for the inspection are in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is processed in accordance with workplace procedures
3. <b>Carry out balancing procedures</b>	3.1.Methods for balancing wheels and tyres are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2.Adjustments made during the balancing procedure are in accordance with manufacturer/component supplier specifications
4. <b>Prepare equipment for customer and/or storage</b>	4.1.Work schedule documentation is completed 4.2.Final inspection is made to ensure safety features are in place 4.3.Final inspection is made to ensure work is to workplace expectations 4.4.Equipment is cleaned for use or storage to workplace expectations

ELEMENT	PERFORMANCE CRITERIA
	4.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to balancing wheels and tyres, including the use of measuring equipment, specialist tooling, computerised technology communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with balancing equipment
- on road operating characteristics of wheels and tyres and associated components are understood
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- balancing procedures
- enterprise quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting inspection results
- conducting balancing procedures in accordance with workplace and manufacturer/component supplier requirements
- completing balancing of wheels and tyres within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

- The following resources should be made available:
- workplace location or simulated workplace
- material relevant to balancing wheels and tyres
- equipment, hand and power tooling appropriate to balancing wheels and tyres
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

	<p>of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Variables**

Variables must include dynamic and static balance

Variables may include steel and alloy rims

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace

<b>RANGE STATEMENT</b>	
	environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and testing equipment, including static and dynamic balancing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault

<b>RANGE STATEMENT</b>	
	reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to balancing wheels and tyres</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Wheels and Tyres
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## AURTTJ2002 Remove and refit wheel hubs and associated brake components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT217865A Remove and refit wheel hubs and associated brake components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to remove and refit wheel hubs and associated brake components necessary during the rectification of faults in steering and suspension systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit applies to all types of wheel hubs and brake systems fitted to light vehicles, including 4WD vehicles and light commercial vehicles.</p> <p>Work involves removing and refitting various brake system components necessary to carry out required rectification procedures for steering and suspension systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare for work</b>	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.Information required for the work is accessed from manufacturer/component supplier specifications and interpreted</p> <p>1.3.WHS policies and procedures are observed throughout the work processes</p> <p>1.4.Components, tooling and equipment required for the work are identified, selected and prepared in accordance with site procedures</p> <p>1.5.Wheel hub and brake components to be removed and refitted are identified and prepared in accordance with manufacturer/component supplier and site procedures</p>
2. <b>Remove wheel hubs and associated brake components</b>	<p>2.1.System components are removed using hand tooling and specialist equipment without causing damage and are stored in an appropriate location</p> <p>2.2.Identified component faults are reported to the customer and discussed for further instructions</p>
3. <b>Refit and adjust wheel hubs and associated brake components</b>	<p>3.1.Removed components are examined for serviceability prior to commencing the refitting procedures</p> <p>3.2.Serviceable components are refitted according to manufacturer/component supplier specifications and instructions</p> <p>3.3.Fluids and lubricants required during the refitting procedures are used in accordance with WHS and manufacturer/component supplier specifications</p> <p>3.4.Refitted components are adjusted according to manufacturer/component supplier specifications</p>
4. <b>Prepare wheel hub and brake components for use</b>	<p>4.1.Work schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure work is to workplace expectations</p> <p>4.3.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removal and refitting of wheel hubs and associated brake components, including the use of measuring equipment, specialist tooling, computerised technology, and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with raised vehicles
- principles of hydraulic brake system operation
- brake bleeding methods
- methods of using and applying lubricants and sealants
- methods of fitting gaskets and circlips
- types of wheel bearings and their adjustment methods

**REQUIRED SKILLS AND KNOWLEDGE**

- dismantling, assembling and adjusting procedures
- types and layout of service/repair manuals (hard copy and electronic)
- accessing/recording information from a computer

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting removal, replacement and tightening sequence and tensioning of wheel hub and brake components in accordance with workplace and manufacturer/component supplier requirements
- completing work within workplace timeframes
- wheel hub and brake components are presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including, Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to removal, fitting and adjustment of wheel hub and brake components
- equipment, hand and power tooling appropriate to removal, fitting and adjustment of wheel hub and brake components
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**System components**

System components may include:

- brake drums
- brake shoes

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• disc brake calipers</li> <li>• wheel cylinders</li> <li>• disc pads</li> <li>• disc rotors</li> <li>• wheel hubs</li> <li>• wheel bearings</li> <li>• ABS rotors and sensors</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures

<b>RANGE STATEMENT</b>	
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"><li>• hand and power tooling</li><li>• lifting equipment and support stands</li><li>• dial indicators</li><li>• torque wrenches</li><li>• brake spring removing tool</li><li>• brake bleeding equipment</li><li>• wheel bearing removing tools</li><li>• wheel bearing grease</li><li>• brake fluid</li></ul>
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions, and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the removal, fitting and adjustment of wheel hub and brake components</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Wheels and Tyres
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## AURTTK2001 Use and maintain measuring equipment in an automotive workplace

### Modification History

Release	Comment
Release 1	Replaces AURT225667A Use and maintain measuring equipment Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to use and maintain measuring equipment of a non-specialist nature.</p> <p>The unit involves identifying and confirming work requirements, preparing for work, conducting measurements, analysing and documenting outcomes, maintaining equipment, and completing work finalisation processes, including clean-up and documentation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work applies to general automotive retail, service and repair environments of a non-specialist nature.</p> <p>Equipment is used to measure length, width, squareness, flatness, angles, roundness, depth, clearances, run out, pressure, temperature or any measurement that can be taken from analogue or digital devices using imperial and metric measurement.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p> <p>This unit should not be selected if the measuring equipment to be used is dedicated to electrical measurements, such as voltage, resistance or current flow.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake measurements	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.<b>Workplace health and safety (WHS) requirements</b> and appropriate precautions are identified and applied</p> <p>1.3.Procedures and instructions, including workshop manuals and specifications, are sourced and used to determine job requirements</p> <p>1.4.Measuring methods appropriate to the circumstances are selected and prepared according to <b>workplace procedures</b></p> <p>1.5.<b>Measuring equipment</b> is sourced and prepared</p> <p>1.6.Warnings relating to working with precision tools and equipment are observed</p>
2. Conduct measurements and analyse results	<p>2.1.Measurement is conducted according to workplace procedures and equipment manufacturer specifications</p> <p>2.2.Measurement results are compared with manufacturer specifications to indicate compliance or non-compliance</p> <p>2.3.Measurements are documented and recommendations made</p> <p>2.4.Reports are processed according to workplace procedures</p>
3. Maintain measuring equipment	<p>3.1.Information required for equipment maintenance is accessed from manufacturer specifications and interpreted</p> <p>3.2.Measuring equipment is checked against manufacturer recommendations and recommended <b>maintenance methods</b> are confirmed to ensure safe and accurate operating condition</p> <p>3.3.Measuring equipment is maintained and stored according to manufacturer specifications</p> <p>3.4.Equipment checks are completed without causing damage to component or system</p> <p>3.5.<b>Workplace documents</b> are completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- analytical skills to identify and analyse technical information
- communication skills to:
  - follow verbal and written instructions
  - communicate information relating to the correct and safe use of equipment
- literacy skills to:
  - read and follow original equipment manufacturer (OEM) maintenance information and measuring equipment use
  - read and follow information on operating procedures and OEM repair guidelines
- numeracy skills to read and interpret metric and non-metric systems of measurement
- planning and organising skills to:
  - identify and minimise risk to operator and others
  - contribute to activities that implement and follow workplace procedures
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person
- self-management skills to:
  - locate and identify appropriate measuring equipment
  - recognise limitations and seek timely advice
  - follow basic workplace documentation, such as operating procedures
- technical skills to:
  - select measuring equipment appropriate to the task
  - use measuring equipment safely
  - maintain measuring equipment using appropriate techniques
  - calibrate or adjust measuring equipment
  - identify defects in measuring equipment and mark for repair
  - store measuring equipment according to manufacturer and workplace procedures
- technology skills to:
  - use manual, electronic and digital measuring equipment
  - use workplace technology to assist with work practices

#### Required knowledge

- WHS regulations, requirements, equipment and material, including personal safety requirements
- common automotive measurement terminology

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- types of non-specialist measuring equipment and their applications
- measurement procedures
- measuring equipment maintenance procedures
- work organisation and planning processes relating to using measuring equipment

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures</li> <li>• communicate effectively with others involved in or affected by the work</li> <li>• select approved measurement methods and techniques</li> <li>• measure dimensions or variables using a range of measuring equipment</li> <li>• accurately interpret measurements</li> <li>• maintain measuring equipment.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• material relevant to the use and maintenance of measuring equipment</li> <li>• equipment and tools appropriate to the use and maintenance of measuring equipment</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Workplace procedures*** may include:

- conducting operational risk assessments and treatments associated with vehicle movement
- site-specific instructions
- safe work procedures relating to the use and maintenance of measuring equipment
- workplace policies and practices
- instructions issued by authorised workplace or external persons
- written and graphical instructions
- signage
- work schedules, plans and specifications
- work bulletins or memos
- diagrams or sketches
- vehicle workshop manuals and information.

***Measuring equipment*** may include:

- internal and external micrometres
- Vernier calipers
- dial gauges
- depth gauges
- steel rulers
- tape measures
- squares
- straight edges
- dividers
- protractors

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• feeler gauges</li> <li>• thermometers</li> <li>• pressure gauges.</li> </ul>
<b><i>Maintenance methods</i></b> may include:	<ul style="list-style-type: none"> <li>• routine maintenance to tools and equipment as per schedules</li> <li>• calibrating or adjusting measuring equipment</li> <li>• minor repairs to tools and equipment</li> <li>• documenting or tagging equipment as faulty or out-of-service.</li> </ul>
<b><i>Workplace documents</i></b> may include:	<ul style="list-style-type: none"> <li>• fault or defect reporting documents</li> <li>• out-of-service reports</li> <li>• job or organisation work specifications and requirements.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical – Tools and Equipment

**Custom Content Section**

Not applicable.

## AURTTK2002 Use and maintain workplace tools and equipment

### Modification History

Release	Comment
Release 1	Replaces AURT270278A Use and maintain workplace tools and equipment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to select, safely use and maintain workplace tooling and equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, selection, use, servicing, maintenance and storage of tooling and equipment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Select correct tooling and equipment for workplace application</b>	1.1.Tooling and equipment are selected to meet job requirements 1.2.Suitable tooling and equipment are selected for use within the workplace environment 1.3.Tooling and equipment are selected according to enterprise procedures/policies
2. <b>Use of tooling and equipment</b>	2.1.Tooling and equipment are used in a safe manner to prevent injury to self and others 2.2.Tooling and equipment are used in a manner that does not cause damage to other workplace equipment 2.3.Observations are noted during the use of tooling/equipment
3. <b>Service and maintain workplace tooling and equipment</b>	3.1.Tooling and equipment are regularly checked against manufacturer/component supplier recommendations to ensure safe operating condition 3.2.Damaged/worn tooling and equipment are tagged and removed from the workplace for repair or replacement and reported in accordance with enterprise requirements 3.3.Tooling/equipment are serviced, adjusted and/or maintained as per manufacturer/component supplier schedule to ensure safe and correct operation, within the scope of responsibility 3.4.Servicing and maintenance operations are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
4. <b>Store and secure tooling and equipment</b>	4.1.Tooling and equipment are cleaned, checked and stored 4.2.Tooling and equipment are securely stored 4.3.Documents are completed according to enterprise policies and procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

**REQUIRED SKILLS AND KNOWLEDGE****Required skills**

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the use and maintenance of workplace tooling and equipment, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

**Required knowledge**

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- tool and equipment selection procedures
- basic maintenance procedures for tooling and equipment
- tool and equipment safety and operating procedures
- types, characteristics, uses and limitations of hand tooling
- types, characteristics, uses and limitations of power tooling
- types, characteristics, uses and limitations of workplace equipment
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- selection and safe use of hand tooling
- selection and safe use of workplace equipment
- basic maintenance of tooling and equipment within the scope of operator responsibility
- selection and safe use of personal protective equipment

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the use and maintenance of workplace tooling and equipment
- equipment, hand and power tooling appropriate to the use and maintenance of workplace tooling and equipment
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

**EVIDENCE GUIDE**

	<p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Tooling and equipment**

Tooling and equipment may include computer hardware/ software, calculators, general office equipment, hand and power tooling, specialist tooling for removal/adjustment, storage racks, protective covers, measuring devices, plastics repair equipment, sealing equipment, adhesive equipment, heating equipment, templates, welding equipment, including oxy, arc, MIG and TIG, vehicle cleaning equipment, service workshop manuals, product manuals, hydraulic breaker tooling, line oilers, filters and gauges, alternator and starting motor bench testers, paint mixers, key cutters, multimeters, load testers, brake and drum lathes, fuel injector cleaners, ignition module test instruments

<b>RANGE STATEMENT</b>	
<b>Maintenance methods</b>	Maintenance methods may include routine maintenance to tooling and equipment as per schedules, labelling faulty tooling and equipment, minor repairs to tooling and equipment, and the chocking, jacking and supporting of machines on level and incline planes
<b>Specific requirements</b>	Specific requirements may include hydraulic jacks, air bags and overhead cranes for lifting heavy machines
<b>Warehouse equipment</b>	Warehouse equipment includes auto picker, bag palletiser, barcode printer and scanner, belt conveyors, bolt cutter, cages, carton sealer, computers, forklifts, battery chargers, pallets, picking trolleys, sprinkler system, strapping machine, fire extinguishers, first aid box, safety signs, security alarm, safety harness, carton crushers, disposal bins, seals and ties, shrink wrap
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting,

<b>RANGE STATEMENT</b>	
	working in proximity to others and site visitors
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the use and maintenance of workplace tooling and equipment</li> <li>• regulatory/legislative requirements pertaining to the automotive industry</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

<b>Co-requisite units</b>		

**Competency field**

<b>Competency field</b>	Technical - Tools and Equipment
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## AURTTL3001 Service CNG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304370A Service CNG fuel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence required to carry out the servicing of CNG fuel systems.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis of inspection results and servicing of CNG fuel systems and completion of work finalisation processes, including clean-up and documentation.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake inspection of CNG fuel system	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for gas system are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with gas systems are observed</p>
2. Conduct inspection and analyse results	<p>2.1.Methods for gas system inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Prepare to service CNG fuel system	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for servicing are identified and support equipment is identified and prepared</p>
4. Carry out servicing	<p>4.1.Methods for servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments made during the servicing are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle for	5.1.Service schedule documentation is completed

ELEMENT	PERFORMANCE CRITERIA
use or storage	<p>5.2.Final inspection is made to ensure safety features are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations</p> <p>5.4.Vehicle is cleaned for use or storage to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing of CNG fuel systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with gas systems
- operating principles of CNG systems
- inspection procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection in accordance with workplace and manufacturer/component supplier requirements
- interpreting inspection results
- servicing the gas system and associated components within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian and Gas Industry Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to servicing of CNG fuel systems
- equipment, hand and power tooling appropriate to servicing of CNG fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load and gas leak testing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and

**RANGE STATEMENT**

	paggers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the servicing of CNG fuel systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules and Gas Industry Standards</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Alternative Fuels
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## AURTIL3002 Diagnose and repair CNG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304366A Repair CNG fuel systems and AURT404384A Diagnose CNG fuel system faults  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair Compressed Natural Gas (CNG) fuel systems fitted to vehicles. It involves diagnosing deviations from correct operation, repairing CNG fuel systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the CNG fuel systems of light vehicles, heavy commercial vehicles, and vehicles in the mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a CNG fuel system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a CNG fuel system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a CNG fuel system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of CNG fuel systems, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing CNG fuel systems
- dangers of working with gas systems
- operating principles of CNG systems
- application, purpose and operation of CNG fuel systems
- testing procedures for CNG fuel systems
- repair procedures for CNG fuel systems
- post-repair testing procedures for CNG fuel systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- diagnose and repair a range of CNG fuel systems
- diagnose and repair CNG fuel systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with CNG fuel system faults relevant to the qualification being sought
- equipment appropriate for the diagnosis and testing of CNG fuel systems
- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

CNG fuel systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Workplace instructions may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• CNG fuel system diagnosis and repair methods, processes and equipment.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of CNG fuel systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Diagnostic tests</i></b> may	<ul style="list-style-type: none"> <li>• CNG fuel system component inspection and evaluation</li> <li>• cold-start enrichment inspection</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• cold and hot engine exhaust gas analysis</li> <li>• testing for air leaks</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• rough running</li> <li>• poor performance</li> <li>• excessive fuel consumption</li> <li>• excessive emissions (particulates, hydrocarbons, carbon monoxide, oxides of nitrogen).</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• cold-start enrichment operation</li> <li>• exhaust gas analysis.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical –Alternative Fuels

**Custom Content Section**

Not applicable.

## AURTTL3003 Install CNG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304331A Install CNG fuel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence required to carry out the installation of CNG fuel systems  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	The unit includes identification and confirmation of work requirement, preparation for work, installation of CNG fuel systems and completion of work finalisation processes, including clean-up and documentation.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake installation of CNG fuel system	<ul style="list-style-type: none"><li>1.1.Nature and scope of work requirements are identified and confirmed</li><li>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.3.Procedures and information such as workshop manuals, specifications, and tooling, are sourced</li><li>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.5.Technical and/or calibration requirements for installation of systems are sourced and support equipment is identified and prepared</li><li>1.6.Warnings in relation to working with CNG fuel systems are observed</li></ul>
2. Carry out installation	<ul style="list-style-type: none"><li>2.1.Methods for installation are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</li><li>2.2.Adjustments made during the installation are in accordance with manufacturer/component supplier specifications</li></ul>
3. Prepare vehicle for use or storage	<ul style="list-style-type: none"><li>3.1.Installation documentation is completed</li><li>3.2.Final inspection is made to ensure safety features are in place</li><li>3.3.Final inspection is made to ensure work is to workplace expectations</li><li>3.4.Vehicle is cleaned for use or storage to workplace expectations</li><li>3.5.Job card is processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the installation of CNG fuel systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with CNG fuel systems
- operating principles of CNG fuel systems
- installation procedures
- testing procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting installation in accordance with workplace and manufacturer/component supplier requirements
- interpreting and recording test results
- installing CNG fuel systems and associated components within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian and Gas Industry Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the installation of CNG fuel systems
- equipment, hand and power tooling appropriate to the installation of CNG fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing and gas leak testing devices
<b>Materials</b>	Materials may include installation kits, spare parts, gas, sealants, adhesive and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or

**RANGE STATEMENT**

	instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the installation of CNG fuel systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules and gas industry standards</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Alternative Fuels
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## AURTTL3004 Service LNG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304470A Service LNG fuel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the service of LNG fuel systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis of inspection results and servicing of LNG fuel systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake inspection of LNG fuel system	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for gas system are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with gas systems are observed</p>
2. Conduct inspection and analyse results	<p>2.1.Methods for gas system inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Prepare to service LNG fuel system	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for servicing are identified and support equipment is identified and prepared</p>
4. Carry out service	<p>4.1.Methods for servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments made during the service are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle for	5.1.Service schedule documentation is completed

ELEMENT	PERFORMANCE CRITERIA
use or storage	<p>5.2.Final inspection is made to ensure safety features are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations</p> <p>5.4.Vehicle is cleaned for use or storage to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing of LNG fuel systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with gas systems
- operating principles of LNG systems
- inspection procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• conducting inspection in accordance with workplace and manufacturer/component supplier requirements</li> <li>• interpreting inspection results</li> <li>• servicing the LNG fuel system and associated components within workplace timeframes</li> <li>• vehicle presentation to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian and Gas Industry Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the servicing of LNG fuel systems</li> <li>• equipment, hand and power tooling appropriate to the servicing of LNG fuel systems</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning</p>

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load and gas leak testing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and

RANGE STATEMENT	
	paggers
Information/documents	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the servicing of LNG gas fuel systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules and Gas Industry Standards</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

Unit sector	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Alternative Fuels
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## AURTIL3005 Diagnose and repair LNG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304466A Repair LNG fuel systems and AURT404484A Diagnose LNG fuel system faults  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair Liquefied Natural Gas (LNG) fuel systems fitted to vehicles. It involves diagnosing deviations from correct operation, repairing LNG fuel systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the LNG fuel systems of vehicles in the light vehicle, road transport, mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a LNG fuel system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a LNG fuel system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a LNG fuel system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of LNG fuel systems, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing LNG fuel systems
- dangers of working with gas systems
- operating principles of LNG systems
- application, purpose and operation of LNG fuel systems
- testing procedures for LNG fuel systems
- repair procedures for LNG fuel systems
- post-repair testing procedures for LNG fuel systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- diagnose and repair range of LNG fuel systems
- diagnose and repair LNG fuel systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with LNG fuel system faults relevant to the qualification being sought
- equipment appropriate for the diagnosis and testing of LNG fuel systems
- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

LNG fuel systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions may include:</b>	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• LNG fuel system diagnosis and repair methods, processes and equipment.</li> </ul>
<b>Workplace health and safety (WHS) requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of LNG fuel systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b>Diagnostic tests</b> may	<ul style="list-style-type: none"> <li>• LNG fuel system component inspection and evaluation</li> <li>• cold-start enrichment inspection</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• cold and hot engine exhaust gas analysis</li> <li>• testing for air leaks</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• rough running</li> <li>• poor performance</li> <li>• excessive fuel consumption</li> <li>• excessive emissions (particulates, hydrocarbons, carbon monoxide, oxides of nitrogen).</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• cold-start enrichment operation</li> <li>• exhaust gas analysis.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical –Alternative fuels

**Custom Content Section**

Not applicable.

## AURTTL3006 Install LNG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304431A Install LNG fuel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the installation of LNG fuel systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, installation of LNG fuel systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake installation of LNG fuel system	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for installation of system are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with gas fuel systems are observed
2. Carry out installation	2.1. Methods for installation are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Adjustments made during the installation are in accordance with manufacturer/component supplier specifications
3. Prepare vehicle for use or storage	3.1. Installation documentation is completed 3.2. Final inspection is made to ensure safety features are in place 3.3. Final inspection is made to ensure work is to workplace expectations 3.4. Vehicle is cleaned for use or storage to workplace expectations 3.5. Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the installation of LNG fuel systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with gas fuel systems
- the operating principles of LNG fuel systems
- installation procedures
- test procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
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<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• conducting installation in accordance with workplace and manufacturer/component supplier requirements</li> <li>• interpreting and recording test results</li> <li>• installing gas fuel systems and associated components within workplace timeframes</li> <li>• vehicle presentation to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian and Gas Industry Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to the installation of LNG fuel systems</li> <li>• equipment, hand and power tooling appropriate to the installation of LNG fuel systems</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning</p>

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load testing and gas leak testing devices
<b>Materials</b>	Materials may include installation kits, spare parts, gas, sealants, adhesives and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or

**RANGE STATEMENT**

	instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the installation of LNG fuel systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules and gas industry standards</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Alternative Fuels
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## AURTTL3007 Service LPG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304270A Service LPG fuel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the servicing of LPG fuel systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis of inspection results and servicing of LPG fuel systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake inspection of LPG fuel system	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for gas system are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with gas systems are observed</p>
2. Conduct inspection and analyse results	<p>2.1.Methods for gas system inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Prepare to service gas system	<p>3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>3.2.Procedures and information are identified and sourced</p> <p>3.3.Technical and tool requirements for servicing are identified and support equipment is identified and prepared</p>
4. Carry out servicing	<p>4.1.Methods for servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Adjustments made during the servicing are in accordance with manufacturer/component supplier specifications</p>
5. Prepare vehicle for	<p>5.1.Service schedule documentation is completed</p>

ELEMENT	PERFORMANCE CRITERIA
use or storage	<p>5.2.Final inspection is made to ensure safety features are in place</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations</p> <p>5.4.Vehicle is cleaned for use or storage to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing of LPG fuel systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with LPG fuel systems
- operating principles of LPG fuel systems
- inspection procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection in accordance with workplace and manufacturer/component supplier requirements
- interpreting inspection results
- servicing the gas system and associated components within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian and Gas Industry Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the servicing of LPG fuel systems
- equipment, hand and power tooling appropriate to the servicing of LPG fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load and gas leak testing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and

**RANGE STATEMENT**

	paggers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the servicing of LPG fuel systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules and Gas Industry Standards</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Alternative Fuels
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## AURTIL3008 Diagnose and repair LPG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304266A Repair LPG fuel systems and AURT404284A Diagnose LPG fuel system faults  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair Liquefied Petroleum Gas (LPG) fuel systems fitted to vehicles. It involves diagnosing deviations from correct operation, repairing LPG fuel systems, and undertaking post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the LPG fuel systems of light vehicles, heavy commercial vehicles, and vehicles in the mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair a LPG fuel system	<p>1.1. <b>Workplace instructions</b> are used to determine <i>job requirements</i></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>
2. Diagnose a LPG fuel system	<p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Repair a LPG fuel system	<p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to adapt to new and emerging situations in the workplace
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
  - participate in self-improvement activities
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - assess tolerances and apply accurate measurements and adjustments
  - interpret instruments, gauges and measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlying causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of LPG fuel systems, including the use of:
  - specialised tools and equipment

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to diagnosing and repairing LPG fuel systems
- dangers of working with gas systems
- operating principles of LPG systems
- application, purpose and operation of LPG fuel systems
- testing procedures for LPG fuel systems
- repair procedures for LPG fuel systems
- post-repair testing procedures for LPG fuel systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- diagnose and repair a range of LPG fuel systems relevant to the qualification being sought
- diagnose and repair LPG fuel systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles with LPG fuel system faults relevant to the qualification being sought
- equipment appropriate for the diagnosis and testing of LPG fuel systems
- specifications and workplace instructions

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- tools appropriate for the repair, replacement and adjustment of LPG fuel systems.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### ***RANGE STATEMENT***

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• LPG fuel system diagnosis and repair methods, processes and equipment</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the diagnosis and repair of LPG fuel systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b><i>Diagnostic tests</i></b> may	<ul style="list-style-type: none"> <li>• LPG fuel system component inspection and evaluation</li> <li>• cold-start enrichment inspection</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

include:	<ul style="list-style-type: none"> <li>• cold and hot engine exhaust gas analysis</li> <li>• testing for air leaks</li> <li>• isolation of fault(s).</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• rough running</li> <li>• poor performance</li> <li>• excessive fuel consumption</li> <li>• excessive emissions (particulates, hydrocarbons, carbon monoxide, oxides of nitrogen).</li> </ul>
<b><i>Repair options</i></b> may include:	<ul style="list-style-type: none"> <li>• component repair procedures, including: <ul style="list-style-type: none"> <li>• removal, replacement and adjustment procedures</li> <li>• dismantle, repair, re-assembly and adjustment procedures.</li> </ul> </li> </ul>
<b><i>Post-repair testing</i></b> may include:	<ul style="list-style-type: none"> <li>• cold-start enrichment operation</li> <li>• exhaust gas analysis.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical –Alternative Fuels

**Custom Content Section**

Not applicable.

## AURTTL3009 Install LPG fuel systems

### Modification History

Release	Comment
Release 1	Replaces AURT304231A Install LPG fuel systems Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the installation of LPG fuel systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, installation of LPG fuel systems and completion of work finalisation processes including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to install LPG fuel systems	<ul style="list-style-type: none"><li>1.1.Nature and scope of work requirements are identified and confirmed</li><li>1.2.WHS requirements, including State/Territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.3.Procedures and information such as workshop manuals and specifications, and tooling are sourced</li><li>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.5.Technical and/or calibration requirements for installation of the systems are sourced and support equipment is identified and prepared</li><li>1.6.Warnings in relation to working with LPG fuel systems are observed</li></ul>
2. Carry out installation	<ul style="list-style-type: none"><li>2.1.Methods for the installation are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</li><li>2.2.Adjustments made during the installation are in accordance with manufacturer/component supplier specifications</li></ul>
3. Prepare vehicle for use or storage	<ul style="list-style-type: none"><li>3.1.Installation documentation is completed</li><li>3.2.Final inspection is made to ensure safety features are in place</li><li>3.3.Final inspection is made to ensure work is to workplace expectations</li><li>3.4.The vehicle is cleaned for use or storage to workplace expectations</li><li>3.5.Job card is processed in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures and workplace policies and procedures
- apply analytical skills for the identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with clients and team members
- apply questioning and active listening skills, e.g. when obtaining information from customers
- apply oral communication skills to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply measurements, calculate material requirements and establish quality checks
- use workplace technology related to the installation of LPG fuel systems, including use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with gas fuel systems
- operating principles of LPG fuel systems
- installation procedures
- test procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting installation in accordance with workplace and manufacturer/component supplier requirements
- interpreting and recording the test results
- installing LPG fuel systems and associated components within workplace timeframes
- vehicle is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements including Australian and Gas Industry Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the installation of LPG fuel systems
- equipment, hand and power tooling appropriate to the installation of LPG fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R training package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

	<p>knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting and working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal enterprise quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load and gas leak testing devices
<b>Materials</b>	Materials may include installation kits, spare parts, gas sealants, adhesives and cleaning material
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or

**RANGE STATEMENT**

	instructions related to job/task and telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets and diagrams or sketches</li><li>• safe work procedures related to the installation of LPG fuel systems</li><li>• regulatory/legislative requirements pertaining to automotive industry including Australian Design Rules and Gas Industry Standards</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Alternative Fuels
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## AURTIL3010 Install LPG, CNG and LNG electrical control equipment

### Modification History

Release	Comment
Release 1	Replaces AURT304031A Install LPG/CNG electrical control equipment  Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies and to include LNG technology

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to install Liquefied Petroleum Gas (LPG), Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) electrical control equipment. It involves identification and confirmation of work requirement, preparation for work, installation of LPG, CNG and LNG electrical control equipment, testing of installed equipment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the LPG, CNG and LNG electrical control equipment of light vehicles, heavy commercial vehicles, and vehicles in the mining, construction and agricultural environments.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to install electrical control equipment	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> relating to LPG, CNG and LNG fuel systems are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate tools and equipment are selected and prepared</p>
2. Carry out installation	<p>2.1. Installation is performed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. <b>Adjustments</b> are made according to workplace procedures and manufacturer and component supplier specifications</p>
3. Conduct post-installation tests and analyse results	<p>3.1. <b>Testing</b> is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.2. Test results are compared with manufacturer and component supplier specifications to indicate compliance or non-compliance</p> <p>3.3. Results are documented according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace and installation documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise to identify installation problems and to suggest possible solutions
- learning skills to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - apply accurate measurements and adjustments
  - interpret instruments, gauges and measuring equipment
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the installation of LPG, CNG and LNG fuel system electrical control equipment, including the use of specialised tools and equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information.

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to installing LPG, CNG and LNG fuel system electrical control equipment
- dangers of working with gas systems
- operating principles of LPG/CNG/LNG control systems and their relationship to the individual gas system and other associated systems
- installation procedures for LPG/CNG/LNG electrical control equipment
- post-installation testing procedures for LPG/CNG/LNG electrical control equipment

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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- conduct the installation and testing of a range of LPG, CNG or LNG electrical control equipment according to workplace, manufacturer and component supplier requirements
- interpret and record test results
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles that require the fitment of gas system electrical control equipment
- material relevant to installing gas system electrical control equipment
- equipment, hand and power tools appropriate to installing gas

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- system electrical control equipment
- specifications and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Workplace instructions** may include:

- computer-generated instructions
- verbal instructions
- written instructions.

**Job requirements** may include:

- LPG, CNG and LNG fuel system electrical control equipment installation methods, processes and equipment

**Workplace health and safety (WHS) requirements:**

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

**Procedures and information** may include:

- verbal, written and graphical instructions
- signage
- work schedules, plans and specifications
- work bulletins or memos
- material safety data sheets (MSDS)
- diagrams or sketches
- safe work procedures relating to the installation of LPG, CNG and LNG fuel system electrical control equipment
- regulatory and legislative requirements relating to the automotive industry
- Australian Design Rules
- Engineer's design specifications and instructions
- organisational work specifications and requirements
- instructions issued by authorised workplace or external persons
- Australian standards
- vehicle service requirements and repair manuals.

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Adjustments*** may include:

- integrating the electrical control system into the existing wiring loom
- changes to the wiring loom length and configuration
- changes to the fuel system configuration
- changes to the air intake system configuration.

***Tests*** may include:

- testing for electrical continuity, resistance, shorts to ground, voltage drop
- verifying correct operation of associated vehicle systems
- gas leakage checks.

**Unit Sector(s)**

**Unit sector**

Mechanical Miscellaneous

**Co-requisite units**

Not applicable.

**Competency field**

**Competency field**

Technical - Alternative fuels

## AURTTL4011 Diagnose complex faults in CNG fuel systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in compressed natural gas (CNG) fuel systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical or electronic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of vehicle CNG fuel systems.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning CNG fuel systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies and discrepancies or <b>faults</b> in CNG fuel systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to CNG fuel systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of CNG fuel systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, fuel, electrical and electronic systems related to CNG fuel systems
- concepts, types, functions, operations and limitations of CNG fuel systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to CNG fuel systems
- testing procedures for CNG fuel systems, including procedures for accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different CNG fuel systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in CNG fuel systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian Standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated CNG fuel system faults
- tools and equipment appropriate for the diagnosis of complex faults in CNG fuel systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults*** may include:

- direct failures in safety systems, electrical systems, fuel delivery system or sequential vapour injection
- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- direct faults in input sensors, output actuators, wiring harness, computer systems, calibration and adjustment specifications
- component specifications, component assembly, component damage and system modifications
- mechanical and fuel system faults

***Tests*** may include:

- wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes
- liquid and vapour pressure, leakage, operation of all safety components and systems, electrical control systems, exhaust emissions, engine performance, CNG system performance and data interpretation
- on-road CNG fuel efficiency testing
- component test

***Testing equipment*** may include:

- multimeters, scan tools, test lights, pressure and vacuum gauges, water and mercury manometers, electronic leak detectors, engine tune oscilloscopes, four-gas engine analyser and exhaust pressure gauge,
- test lights and test LEDs

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• manufacturer and component supplier testing equipment</li></ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"><li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to CNG fuel systems</li><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical – Alternative fuels

**Custom Content Section**

Not applicable.

## AURTTL4012 Diagnose complex faults in LNG fuel systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose complex faults in liquefied natural gas (LNG) fuel systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical or electronic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of vehicle LNG fuel systems.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning LNG fuel systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies and discrepancies or <b>faults</b> in LNG fuel systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected diagnostic processes are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to LNG fuel systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of LNG fuel systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, fuel, electrical and electronic systems related to LNG fuel systems
- concepts, types, functions, operations and limitations of LNG fuel systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to LNG fuel systems
- testing procedures for LNG fuel systems, including procedures for accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different LNG fuel systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in LNG fuel systems.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian Standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated LNG fuel system faults
- tools and equipment appropriate for the diagnosis of complex faults in LNG fuel systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Workplace health and safety (WHS) requirements:***

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

***Faults*** may include:

- direct failures in safety systems, electrical systems, fuel delivery system or sequential vapour injection
- indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
- direct faults in input sensors, output actuators, wiring harness, computer systems, calibration and adjustment specifications
- component specifications, component assembly, component damage and system modifications
- mechanical and fuel system faults

***Tests*** may include:

- wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes
- liquid and vapour pressure, leakage, operation of all safety components and systems, electrical control systems, exhaust emissions, engine performance, LNG system performance and data interpretation
- on-road LNG fuel efficiency testing
- component test

***Testing equipment*** may include:

- multimeters, scan tools, test lights, pressure and vacuum gauges, water and mercury manometers, electronic leak detectors, engine tune oscilloscopes, four-gas engine analyser and exhaust pressure gauge,
- test lights and test LEDs

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• manufacturer and component supplier testing equipment</li></ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"><li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to LNG fuel systems</li><li>• six-step troubleshooting plan</li><li>• discover-investigate-fix methodology</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical – Miscellaneous
<b>Unit sector</b>	Technical – Alternative fuels

**Custom Content Section**

Not applicable.

## AURTTL4013 Diagnose complex faults in LPG fuel systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required diagnose complex faults in liquefied petroleum gas (LPG) fuel systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical or electronic by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to and includes system fault and failure diagnosis of vehicle LPG fuel systems.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning LPG fuel systems are accessed and interpreted</p> <p>1.3. <b>Workplace health and safety (WHS) requirements</b>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies and discrepancies or <b>faults</b> in LPG fuel systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <b>tests</b> and testing process are identified and selected from the range of available options</p> <p>2.4. <b>Testing equipment</b> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <b>diagnostic processes</b> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to LPG fuel systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of LPG fuel systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems.

#### Required knowledge

- concepts and principles of mechanical, fuel, electrical and electronic systems related to LPG fuel systems
- concepts, types, functions, operations and limitations of LPG fuel systems and components
- diagnostic theory, including concept, design and planning
- types, functions, operations and limitations of diagnostic testing equipment related to LPG fuel systems
- testing procedures for LPG fuel systems, including procedures for accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different LPG fuel systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in LPG fuel systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian Standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated LPG fuel system faults
- tools and equipment appropriate for the diagnosis of complex faults in LPG fuel systems

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• direct failures in safety systems, electrical systems, fuel delivery system or sequential vapour injection</li> <li>• indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations</li> <li>• direct faults in input sensors, output actuators, wiring harness, computer systems, calibration and adjustment specifications</li> <li>• component specifications, component assembly, component damage and system modifications</li> <li>• mechanical and fuel system faults</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>• wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes</li> <li>• liquid and vapour pressure, leakage, operation of all safety components and systems, electrical control systems, exhaust emissions, engine performance, LPG system performance and data interpretation</li> <li>• on-road LPG fuel efficiency testing</li> <li>• component test</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• multimeters, scan tools, test lights, pressure and vacuum gauges, water and mercury manometers,</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	electronic leak detectors, engine tune oscilloscopes, four-gas engine analyser and exhaust pressure gauge, <ul style="list-style-type: none"> <li>• test lights and test LEDs</li> <li>• manufacturer and component supplier testing equipment</li> </ul>
<i>Diagnostic processes</i> may include:	<ul style="list-style-type: none"> <li>• analysing manufacturer and component supplier specifications, schematics and operational procedures related to LPG fuel systems</li> <li>• six-step troubleshooting plan</li> <li>• discover-investigate-fix methodology</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical – Alternative fuels

**Custom Content Section**

Not applicable.

## AURTTL5014 Analyse and evaluate gas fuel system faults

### Modification History

Release	Comment
Release 1	<p>Replaces AURT477093A Analyse and evaluate gas fuel system faults</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to analyse and evaluate gas fuel systems in order to initiate action to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and record the most appropriate response to the stated objective of the analysis and evaluation process.</p> <p>Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Work instructions and reports are used to determine the nature and objective of the analysis and evaluation requirements.</p> <p>1.2. Benchmark specifications for correctly functioning gas fuel systems are accessed and interpreted.</p> <p>1.3. WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4. The effects of any systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5. Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1. Evaluative criteria are developed/adopted to meet the objective of the work.</p> <p>2.2. System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3. The most appropriate analytical and evaluative methodology including diagnostic process, sequence, tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4. Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5. Tools and material required to support the diagnostic process are identified, selected and prepared for use.</p> <p>2.6. Gas fuel system components are prepared for the diagnostic process including park-up, isolation and cleaning requirements.</p>
3. Apply the analysis and evaluative methodology	<p>3.1. The selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2. Tests and testing equipment are applied in accordance with regulatory requirements and the manufacturer/component supplier specifications.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3. Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4. Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5. Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6. Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1. Options for responding to the objective or need are identified from further research of technical support information.</p> <p>4.2. The most appropriate response option is selected from an analysis of the options, the prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3. The selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Testing equipment and other support material are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3. Waste and scrap is removed following workplace procedures.</p> <p>5.4. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, organise and understand technical information related to contemporary gas fuel systems, monitoring and testing processes, diagnostic methods and options and safety procedures.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, the reporting of work outcomes and the completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities including the planning of analytical processes, the establishment of evaluative (success) criteria, the preparation and layout of the worksite and the obtaining of testing equipment and material to avoid any backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results.
- establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.
- use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tools, calculators and measuring devices.

#### Required knowledge

- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation.
- general knowledge of the theory of diagnosis including concept, design and planning.
- detailed knowledge of the concepts, types, functions, operations and limitations of gas fuel systems.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for recording and reporting diagnostic findings and recommendations.
- general knowledge of personal computer operation.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply relevant information.
- Apply safety requirements including the isolation of equipment and the use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Diagnose gas fuel system faults, including one fault from each category listed below:
  - poor engine performance
  - increased emission levels
  - impact of a prior system modification
  - incorrect installation of the gas system
  - caused by an influence from an external system.
- Accurately record and report the diagnostic process and findings and recommended rectification.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

#### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with relevant process equipment, material, work instructions and deadlines.

Access to a realistic requirement and objectives for analysis and evaluation, operational gas fuel systems with real or simulated faults, monitoring processes and testing equipment appropriate to the objectives, research facilities and technical information and a realistic work environment.

**EVIDENCE GUIDE****Method of assessment**

Assessment of this competency is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

Assessment must confirm the inference that competency is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Failure analysis and evaluation process**

The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.

**System faults**

Gas fuel system faults covered by this unit are to include direct failures in safety systems, electrical systems, fuel delivery system, sequential vapour injection, fuel container, calibration and adjustment specifications, component specifications, component assembly and system modifications.

**System failures**

Gas fuel system failures covered by this unit are to

<b>RANGE STATEMENT</b>	
	include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operations.
<b>Unit context</b>	Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements.
<b>WHS</b>	WHS requirements, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.
<b>Evaluative criteria</b>	Evaluative criteria, sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are judged. They are to include statistically based criteria and may include other measures.
<b>Isolation procedures</b>	Equipment isolation procedures are to regulatory, industry and enterprise standards.
<b>Testing equipment</b>	Testing equipment is to include multimeters, data scanners, test lights, pressure/vacuum gauges, water and mercury manometers, electronic leak detectors, engine tune oscilloscopes, four-gas engine analyser and exhaust pressure gauge, and may include other manufacturer testing equipment.
<b>Tests</b>	Tests to be conducted are to include liquid and vapour pressure, leakage, operation of all safety components and systems, electrical control systems, exhaust emissions, engine performance, gas system performance and data interpretation and readings related to direct, indirect and intermittent causes.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"><li>• Workplace procedures relating to the use of tools and equipment.</li><li>• Workplace procedures relating to reporting and communication.</li></ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• Manufacturer/component supplier specifications and application procedures for testing equipment and material.</li><li>• Manufacturer/component supplier specifications, schematics and operational procedures related to stability/steering and suspension systems.</li><li>• Australian Design Rules.</li><li>• Gas fuel system regulations.</li><li>• Vehicle industry publications related to emerging gas fuel system technology and technology changes.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Alternative Fuels
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## AURTTL5015 Develop and apply gas fuel system modifications

### Modification History

Release	Comment
Release 1	<p>Replaces AURT577120A Develop and apply gas fuel systems modification</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to develop, apply and validate significant modifications to existing gas fuel systems in order to sustain, vary or enhance performance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This includes the preparation and application of specifications and processes complying with safety, legal and commercial obligations.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the modification requirement	<p>1.1.WHS requirements, including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.2.Purpose and objectives of the modification are identified from an analysis of inputs and confirmed with the customer.</p> <p>1.3.Outline options for achieving the required purpose and objectives are identified, framed and presented to the customer prior to proceeding.</p> <p>1.4.Possible legal and safety impacts of the modification are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Develop and validate the modification specification	<p>2.1.Benchmark specifications for the existing gas fuel system are accessed and interpreted.</p> <p>2.2.Criteria to be used in the selection of the modification method and in the evaluation of the outcomes are identified and documented.</p> <p>2.3.Proposed modification method is selected following the identification, consideration and evaluation of the full range of available and relevant options.</p> <p>2.4.Selected option, including material choices and processes, is developed in detail and progressively validated against the established criteria.</p> <p>2.5.Modification specification is documented to industry and enterprise standards.</p>
3. Apply and test the modification specification	<p>3.1.Selected modification method and process is followed in accordance with the established specifications.</p> <p>3.2.Modification is completed using equipment, tooling and materials in accordance with accepted industry standards and practices.</p> <p>3.3.Tests and testing equipment are applied in accordance with regulatory requirements, manufacturer/component supplier specifications and modification specification.</p> <p>3.4.Test results and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes.</p> <p>3.5.Variations necessitated during the modification process or as a result of testing are incorporated into</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>the modification specification.</p> <p>3.6.Information and detail related to the modification is documented and provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Clean up work area and maintain equipment	<p>4.1.Materials that can be reused is collected and stored.</p> <p>4.2.Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>4.3.Waste and scrap is removed following workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand legal and technical information related to contemporary gas fuel systems modifications.
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs.
- plan and organise activities, including the development and planning of modification processes, preparation and layout of the worksite and the obtaining of tooling, equipment, materials and testing equipment to avoid backtracking, workflow interruptions or wastage.
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to complete measurements, calculate specifications, calibrate and establish testing equipment and evaluate modification results against pre-established criteria.
- establish modification methods and processes which anticipate and allow for risks and avoid or minimise reworking and avoid wastage.
- use the full range of workplace technology related to gas fuel systems modification, including testing equipment, maintenance equipment, tooling, calculators and measuring devices and information management systems.

#### Required knowledge

- mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems.
- general knowledge of the theory of diagnosis, including concept, design and planning.
- detailed knowledge of the concepts, types, functions, operations and limitations of gas fuel systems.
- detailed knowledge of the types, functions, operations and limitations of diagnostic testing equipment.
- general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations.
- general knowledge of personal computer operation.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply information.
- Apply safety requirements, including the isolation of equipment and use of personal protective equipment.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self and others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality.
- Modify a significant gas fuel system or sub-system including:
  - selection, development and documenting of success factors and evaluation criteria before undertaking the modification
  - selection, development and validation of the modification methodology, processes and specification
  - application of modification specification, methodology and process
  - the documenting and reporting of the outcomes.
- Work effectively with others.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.

Access to an operational gas fuel system requiring modification, testing equipment as stipulated in the Range Statement, technical information and a work environment.

##### Method of assessment

Assessment of this unit of competence is most likely to be project related and require portfolios or other forms of indirect evidence of process. Direct evidence will include certification of compliance of the final outcome/product or authorisation for use by a competent authority.

**EVIDENCE GUIDE**

	<p>Assessment must confirm the inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other projects.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Gas fuel systems modifications</b>	<p>Gas fuel systems modifications to be covered by this unit may include those to:</p> <ul style="list-style-type: none"> <li>• enhance engine performance</li> <li>• maintain emissions</li> <li>• meet Australian Design Rules</li> <li>• meet legislative requirements retrospectively.</li> </ul>
<b>Inputs to the modification method and processes</b>	<p>Inputs to the modification method and processes may be obtained from customer requirements, manufacturer/ component supplier specifications, outcomes of diagnostic processes or from regulatory, licensing, intellectual property legislation, safety requirements and Australian Design Rules.</p>
<b>Unit context</b>	<ul style="list-style-type: none"> <li>• WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code and safe operating procedures.</li> <li>• Work is carried out in accordance with</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.</p> <ul style="list-style-type: none"> <li>• Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.</li> </ul>
<b>Evaluation criteria</b>	Evaluation criteria, sometimes referred to as success factors, are to be established prior to a modification being undertaken and are to cover safety, functionality, survivability, maintainability, life cycle cost and aesthetics.
<b>Isolation procedures</b>	Equipment isolation procedures are to be to industry and enterprise standards.
<b>Tests and testing equipment</b>	Tests and testing equipment is to include that appropriate to the modification being carried out but it should include computer-based diagnostic systems.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Workplace procedures relating to the use of tooling and equipment.</li> <li>• Workplace procedures relating to reporting and communication.</li> <li>• Manufacturer/component supplier specifications and application procedures for testing equipment and materials.</li> <li>• Manufacturer/component supplier specifications, schematics and operational procedures related to gas fuel systems modification.</li> <li>• Australian Design Rules.</li> <li>• Gas fuel vehicle regulations.</li> <li>• Vehicle industry publications related to emerging transmission system technology and technology changes.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Alternative Fuels
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## AURTTM3001 Operate and monitor computer numerical control machines

### Modification History

Release	Comment
Release 2	Replaces AURTTM3001 Operate and monitor computer numerical control machines (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to operate and monitor CNC (computer numerical control) machines. It involves the ability to determine the machining process required, select the appropriate program, and perform machining to specifications and workplace requirements as part of an engine reconditioning process.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	<p>Engine components to be machined may include those from light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.</p> <p>Work is carried out according to award provisions.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to operate a CNC machine	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is sourced, procedures and methods are analysed, and appropriate work options are selected for operating and monitoring CNC machines</p> <p>1.3. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.4. Pre-start checks are undertaken to standard operating procedures</p>
2. Operate a CNC machine	<p>2.1. Computer program is selected and verified according to job instructions</p> <p>2.2. CNC machine is operated safely to product specifications using standard operating procedures</p> <p>2.3. Machine malfunctions are identified and reported</p> <p>2.4. Machining is checked for compliance with specification using standard operating procedures</p>
3. Perform necessary adjustments during machining process	<p>3.1. Tool wear is monitored and, where appropriate, pre-set tools are replaced, tool offsets are identified in computer-controlled program and adjusted, or other corrective action is taken using standard operating procedures</p> <p>3.2. <b>Engine component</b> deviation from specification is reported according to standard operating procedures</p>
4. Clean up work area and maintain equipment	<p>4.1. Final inspection is made to ensure finished work complies with workplace requirements</p> <p>4.2. Engine components and equipment are cleaned for use or storage to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

technical skills to:

- monitor the machine or process for signs of tool wear and take corrective action
- measure to specified tolerances and dimensions

communication skills to:

- follow oral instructions
- report deviations from specifications

literacy skills to:

- read and interpret routine job instructions, specifications, drawings and standard operating procedures
- make pre-start checks
- understand quality procedures

numeracy skills to use mathematical ideas and techniques to:

- calculate time
- assess tolerances
- apply accurate measurements
- calculate material requirements
- establish quality checks

problem-solving skills to:

- identify and avoid planning and scheduling problems
- prevent time and material wastage
- organise work and plan processes

self-management skills to:

- select and use appropriate equipment, materials, processes and procedures
- recognise limitations and seek timely advice
- follow workplace documentation, such as codes of practice and operating procedures

teamwork skills to:

- work with diverse individuals and groups
- apply knowledge of own role to complete activities efficiently to support colleagues' activities and tasks

technology skills to use communication devices and computerised equipment to:

- search and gather supporting material
- follow CNC machine operating procedures

### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety

requirements relating to the use of CNC machines

- procedures for accessing computer-controlled programs installed in the machine controller, including:
  - posting appropriate program to the machine
  - selecting tool specified by the program and for the material to be machined
  - selecting appropriate speeds and feeds
- computer-controlled machine operating procedures, including:
  - zeroing the machine axes
  - engaging warm-up procedures, and checking lubricant levels, coolant levels and machine slide ways
  - mounting tool in tool holder
  - setting tool height manually
  - setting machine offset parameters to correct tool number and height
  - setting work piece datum/zero point
  - recording data in machine offsets
  - selecting dry-run mode on CNC controller and single block to test program
- procedures for basic editing of computer program to reflect specific job requirements
- typical machine malfunctions
- tool wear and the effect of wear on product or part specifications
- procedures to be followed once tool wear has been detected
- pre-set tool replacement procedures
- adjustment procedures of tool offsets
- effect of adjustments on machining specifications

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• communicate effectively with others involved in or affected by the work</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• conduct CNC machining of a range of engine components according to workplace, manufacturer and component supplier requirements</li> <li>• produce engine components that comply with workplace requirements.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> </ul>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"><li>• CNC machines appropriate for machining automotive engine components</li><li>• a range of engine components</li><li>• specifications and work instructions.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of CNC machines</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• individual state or territory regulatory requirements</li> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• toxic substances</li> <li>• working in proximity to others and site visitors</li> </ul> </li> <li>• personal protective equipment (PPE) required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<b>Environmental requirements</b> include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>
<b>Engine components</b> may include:	<ul style="list-style-type: none"> <li>• engine blocks</li> <li>• engine cylinder heads</li> </ul>

**Range Statement**

	<ul style="list-style-type: none"><li>• engine manifolds.</li></ul>
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**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Sector</b>	Technical - Manufacture

**Custom Content Section**

Not applicable.

## AURTTM3002 Repair bearing tunnels and connecting rods in engines

### Modification History

Release	Comment
Release 2	Replaces AURTTM3002 Repair bearing tunnels and connecting rods in engines (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to repair bearing tunnels and connecting rods in engines. It involves determining the machining process required, selecting the appropriate machine, and performing the machining to specifications and workplace requirements in an engine reconditioning process.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	Work applies to engine components to be machined, which may include those from light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles. Work is carried out according to award provisions.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to line-bore an engine	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is sourced, procedures and methods are analysed, and <b>appropriate tooling options</b> are selected for line boring an engine</p> <p>1.3. <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5. Engine is <b>measured</b> and <b>calibration</b> requirements for line boring are determined</p> <p>1.6. <b>Engine block or cylinder head is prepared</b> for line boring</p> <p>1.7. <b>Line-boring machine is prepared</b> to accept cylinder engine block or cylinder head</p> <p>1.8. Engine block or cylinder head is positioned and securely clamped</p>
2. Line-bore tunnels	<p>2.1. Tool is <b>set and locked</b> and a test cut is taken</p> <p>2.2. Engine tunnels are line bored at correct <b>speeds and feed rates</b> without causing damage to components or system</p> <p>2.3. Tunnels are checked/measured with instruments to ensure compliance with specifications</p> <p>2.4. Line-boring operations are completed to required specifications and <b>honing allowances</b></p>
3. Prepare tunnels for honing operations	<p>3.1. Line-bored engine block or cylinder head is cleaned of residue and swarf, and cleaned using appropriate cleaning materials</p> <p>3.2. Honing machine is prepared to accept engine block or cylinder head</p> <p>3.3. Engine block or cylinder head is positioned and securely clamped, and required hone stroke is set</p> <p>3.4. Hone stones are selected and speed is set to achieve required finish</p>
4. Hone engine tunnels	<p>4.1. Tunnels are honed at correct speed and rate to required finish without causing damage to components or system</p> <p>4.2. Components are checked/measured with</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>instruments to ensure compliance with specifications</p> <p>4.3.Honing operations are completed in line with required bore to journal clearance</p>
5. Prepare connecting rods for repair operations	<p>5.1.Connecting rods are checked for straightness and straightened as necessary</p> <p>5.2.Connecting rod-boring machine is prepared to accept connecting rod</p> <p>5.3.Connecting rod is positioned ready for honing, and securely clamped if machining</p>
6. Repair connecting rod	<p>6.1.Connecting rod little-ends are resized according to workplace requirements</p> <p>6.2.Connecting rod big-ends are resized according to workplace requirements</p> <p>6.3.Connecting rods are repaired without causing damage to components or system</p> <p>6.4.Components are checked/measured with instruments to ensure compliance with specifications</p>
7. Finalise repair process	<p>7.1.Engine block or cylinder head is thoroughly cleaned of residue honing oil</p> <p>7.2.Final inspection is made to ensure finished work complies with workplace requirements</p> <p>7.3.Bright surfaces are treated with a protective coating to prevent rust if engine block or cylinder head is to be stored</p> <p>7.4.Engine block or cylinder head is prepared for further processing or storage</p> <p>7.5.Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - sharpen and shape cutting tools
  - identify worn and damaged cutting tools
  - mount and position cutting tools
  - set machining parameters to achieve job requirements and maximise tool life
  - use appropriate and sufficient clamping/mounting of the work piece
  - use coolant and lubricant correctly
  - check for conformance to specifications
  - measure to specified tolerances and dimensions
- communication skills to:
  - follow oral instructions
  - report deviations from specifications
  - interact with customers and team members
- literacy skills to:
  - read and interpret routine job instructions, specifications, drawings and standard operating procedures
  - understand quality procedures
- numeracy skills to use mathematical ideas and techniques to:
  - calculate time
  - assess tolerances
  - apply accurate measurements
  - calculate material requirements
  - establish quality checks
- problem-solving skills to:
  - identify and avoid planning and scheduling problems
  - prevent time and material wastage
  - organise work and plan processes
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to use communication devices and computerised equipment to:
  - search and gather supporting material
  - take, locate, download and view digital images

### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety requirements, including:
  - correct personal protective equipment (PPE) for handling engine blocks, using line-boring and honing machines, and using chemical cleaning and lubricating agents
  - hazards associated with rotating line-boring and honing tools
- types, characteristics and limitations of line-boring and honing machines, including:
  - types and grades of boring tools
  - types and grades of honing stones
- tool sharpening and dressing methods, including:
  - maintaining sharpness of tools throughout boring operations
  - dressing procedures of stones
- line boring methods and procedures, including:
  - setting engine block or cylinder head into line boring machine and aligning to the centre line of the boring bar
  - setting the line boring tool to the correct diameter and locking the boring tool
  - welding and relocating main bearing caps
  - machining top and bottom of bearing caps
  - preparing line borer to accept engine block or cylinder head
  - machining parting faces of the cylinder head camshaft bearing
  - line boring cylinder head camshaft tunnels
  - line boring damaged tunnels to oversize to accept sleeving operation
  - machining parting faces of the cylinder block
  - line boring cylinder block tunnels to accept oversized back bearings
  - line boring tunnels to leave a honing allowance
  - line boring rear main bearing areas and thrust-bearing diameters to original size
  - machining and squaring thrust faces in engine blocks
  - line boring semi-finished camshaft bearings
- line-honing methods and procedures, including:
  - procedures for setting the diameter of the honing stone
  - rotational and oscillating speeds of honing bar
- connecting rod repair methods and procedures, including:
  - removing rod eye bush and measuring rod eye bore
  - checking alignment of connecting rod and straightening the connecting rod
  - boring rod eye for over-sized bush
  - removing cap bolts and nuts and machining parting faces on connecting rod and big-end cap
  - resizing big-end for standard and oversize back bearings
  - fitting new little-end bushes and pin boring little-ends

- |   |
|---|
| <ul style="list-style-type: none"><li>• types and application of cleaning and lubricating agents</li><li>• Australian standards relevant to engine reconditioning</li></ul> |
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## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select methods and techniques for repairing bearing tunnels and connecting rods appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• line bore and hone a range of multi-cylinder engines according to workplace, manufacturer and component supplier requirements</li> <li>• repair a range of connecting rods according to workplace, manufacturer and component supplier requirements</li> <li>• complete work without damage to tools and equipment or injury to persons.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the</p>

**Evidence Guide**

	<p>assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• multi-cylinder engine blocks and cylinder heads appropriate to the workplace, including in-line multi-cylinder engine blocks, vee-configuration multi-cylinder engine blocks, and overhead camshaft cylinder heads</li> <li>• fixed and portable hand and power tools and equipment appropriate to line boring and honing engine blocks and cylinder heads</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with repairing bearing tunnels and connecting rods</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>Appropriate tooling options</b> may include:	<ul style="list-style-type: none"> <li>• grades of tool tips</li> <li>• hand-held and machine-operated hones</li> <li>• types and grades of honing stones</li> <li>• types of boring tools.</li> </ul>
<b>Tooling and measuring equipment</b> may include:	<ul style="list-style-type: none"> <li>• arbors</li> <li>• clamps</li> <li>• dial bore gauges</li> <li>• dial indicators</li> <li>• inside and outside micrometers.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• individual state or territory regulatory requirements</li> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> </ul> </li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• toxic substances</li> <li>• working in proximity to others and site visitors</li> <li>• PPE required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<i>Environmental requirements</i> include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>
<i>Measured and calibration</i> may include:	<ul style="list-style-type: none"> <li>• determining sizes of cut and required honing allowances</li> <li>• determining tunnel to journal clearance.</li> </ul>
<i>Engine block or cylinder head is prepared</i> may include:	<ul style="list-style-type: none"> <li>• removing main bearings from engine block</li> <li>• machining bearing cap parting faces</li> <li>• fitting bearing caps to required tensions.</li> </ul>
<i>Line-boring machine is prepared</i> must include:	<ul style="list-style-type: none"> <li>• clamps</li> <li>• jigs</li> <li>• rails.</li> </ul>
<i>Set and locked</i> will include:	<ul style="list-style-type: none"> <li>• setting the tool to the required diameter</li> <li>• locking the tool according to manufacturer specifications.</li> </ul>
<i>Speeds and feed rates</i> will include:	<ul style="list-style-type: none"> <li>• those correct for tunnel material and diameter.</li> </ul>
<i>Honing allowances</i> will include:	<ul style="list-style-type: none"> <li>• those that are dependent on the speed and feed and nose radius of the boring tool.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical Miscellaneous
<b>Sector</b>	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3003 Apply metal to rebuild engine components

### Modification History

Release	Comment
Release 2	Replaces AURTTM3003 Apply metal to rebuild engine components (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to use industry-accepted methods to apply metal spray, hard chrome and weld materials to rebuild components. It involves determining repair requirements and rebuilding engine components in an engine reconditioning process.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to engine components to be rebuilt, which may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.</p> <p>Work is carried out according to award provisions.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake metal building procedures	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is sourced, procedures and methods are analysed, and <b>appropriate tooling options</b> are selected for rebuilding engine components</p> <p>1.3. <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5. <b>Engine component is prepared</b> for metal application</p>
2. Apply metal to engine components	<p>2.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>2.2. Metal application process is used to rebuild damaged <b>engine components</b></p> <p>2.3. <b>Rebuild method</b> is completed in readiness for further repair without causing damage to components or system</p>
3. Perform necessary machining to rebuild component	<p>3.1. Machining is carried out according to workplace procedures and without causing damage to component or system</p> <p>3.2. Component is checked and measured with instruments to ensure compliance with specifications</p> <p>3.3. Machining operations are completed to specifications</p>
4. Finalise rebuild process	<p>4.1. Surfaces of component are finished to manufacturer and component supplier specifications and allowable tolerances</p> <p>4.2. Finishing work is completed without causing damage to the component</p> <p>4.3. Surfaces are protected with a rust prevention solution</p> <p>4.4. Components are prepared for further process or storage</p> <p>4.5. Workplace documentation is processed according to workplace procedures</p>



## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - identify and rectify weld defects
  - identify worn and damaged cutting and grinding tools
  - mount and position cutting and grinding tools
  - set machining parameters to achieve job requirements and maximise tool life
  - measure to specified tolerances and dimensions
- communication skills to:
  - follow oral instructions
  - report deviations from specifications
  - interact with customers and team members with regard to workplace instructions
- literacy skills to:
  - read and interpret routine job instructions, specifications, drawings and standard operating procedures
  - identify and analyse technical information
  - understand quality procedures
- numeracy skills to use mathematical ideas and techniques to:
  - calculate time
  - assess tolerances
  - apply accurate measurements
  - calculate material requirements
  - establish quality checks
- problem-solving skills to:
  - locate, interpret and apply workplace policies and procedures, including manufacturer and component procedures
  - identify and avoid planning and scheduling problems
  - prevent time and material wastage
  - organise work and plan processes
- planning and organising skills to:
  - make good use of time and resources
  - set priorities
  - monitor own performance
- self-management skills to:
  - manage risks and hazards associated with machinery for applying metal, cutting and grinding
  - optimise workflow and productivity

**Required knowledge**

- WHS regulations and requirements, equipment, material and personal safety requirements, including:
  - personal protective equipment (PPE) for using welding equipment and machines to rebuild engine components
  - hazards associated with welding equipment
- procedures for identifying existing heat treatment processes, including nitriding, tufftriding, and induction hardening
- engine and engine component structures
- specific welding procedures, including:
  - manual metal arc welding (MMAW)
  - gas metal arc welding (GMAW)
  - gas tungsten arc welding (GTAW)
  - flux core
  - metal spraying
  - submerged arc
- procedures for hard chrome application
- repair operations for components, including:
  - crankshaft journals, camshaft journals and lobes, seal areas, crankshaft nose and keyway, and pulley retaining thread damage
  - crankshaft radius treatment, including:
    - shot peening
    - radius rolling
    - deep fillet radius rolling
- Australian standards relevant to engine reconditioning

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select methods and techniques for applying metal appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• rebuild a range of engine components according to workplace, manufacturer and component supplier requirements</li> <li>• complete work without damage to tools and equipment or injury to persons.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources should be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• crankshafts, camshafts, engine cylinder head assemblies, and engine block assemblies</li> </ul>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"><li>• material relevant to rebuilding engine components</li><li>• equipment and hand and power tools appropriate to rebuilding engine components</li><li>• specifications and work instructions.</li></ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Information</i></b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with rebuilding engine components</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b><i>Appropriate tooling options</i></b> may include:	<ul style="list-style-type: none"> <li>• grades of tool tips necessary to produce required finish</li> <li>• MMAW, GMAW, GTAW, flux core and metal spraying</li> <li>• types and grades of grinding stones</li> <li>• types of facing tools.</li> </ul>
<b><i>Tools and measuring equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• clamps</li> <li>• dial indicators</li> <li>• hand and power tools</li> <li>• inside and outside micrometers</li> <li>• lifting equipment</li> <li>• welding equipment, such as: <ul style="list-style-type: none"> <li>• roll welders</li> <li>• short arc welding equipment</li> <li>• gas metal arc welders</li> </ul> </li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• gas tungsten arc welders</li> <li>• metal spraying equipment</li> <li>• hard chroming equipment.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• individual state or territory regulatory requirements</li> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• toxic substances</li> <li>• working in proximity to others and site visitors</li> </ul> </li> <li>• PPE required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<b>Environmental requirements</b> include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>
<b>Preparing the engine component</b> may include:	<ul style="list-style-type: none"> <li>• cleaning the component using appropriate cleaning methods</li> <li>• fitting and clamping the component.</li> </ul>
<b>Engine components</b> may include:	<ul style="list-style-type: none"> <li>• alloy and cast iron cylinder heads</li> <li>• camshaft lobes and journals</li> <li>• crankshaft and camshaft bearing faces</li> <li>• crankshaft journals and thrust surfaces</li> <li>• piston and connecting rod assemblies.</li> </ul>
<b>Rebuild methods</b> will include:	<ul style="list-style-type: none"> <li>• building up lobes/journals by welding, metal spraying and hard chroming</li> <li>• repairing cast iron cylinder heads</li> <li>• repairing cracks in alloy cylinder heads.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical Miscellaneous
<b>Sector</b>	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3004 Assemble engine blocks and sub-assemblies

### Modification History

Release	Comment
Release 2	Replaces AURTTM3004 Assemble engine blocks and sub-assemblies (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to assemble a short engine block and sub-assemblies and check clearances and tolerances.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to a range of engine blocks and sub-assemblies in an engine reconditioning process. Engine cylinder blocks to be assembled may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.</p> <p>This unit does not cover fitting semi-finished sleeves nor boring and honing cylinders (see AURTTM3009 Fit sleeves and bore and hone engine cylinders).</p> <p>Work is carried out according to award provisions.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to assemble engine block and sub-assemblies	<p>1.1 <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2 <b>Information</b> is sourced, procedures and methods are analysed, and <b>appropriate tooling options</b> are selected for rebuilding engine components</p> <p>1.3 <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4 Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5 <b>Technical information</b> for assembly is sourced, and <b>support equipment</b> and <b>facilities</b> are identified and prepared</p> <p>1.6 <b>Pre-assembly cleaning</b> of <b>engine components</b> is carried out and components are laid out in logical order</p> <p>1.7 <b>Replacement component parts</b> are checked for size and suitability</p>
2. Check clearances and tolerances	<p>2.1. <b>Clearances and tolerances are measured</b> according to workplace requirements</p> <p>2.2. <b>Clearances and tolerances are adjusted</b> without causing damage to components or system according to workplace requirements</p>
3. Assemble engine sub-assemblies	<p>3.1. <b>Engine sub-assemblies are assembled</b> in correct order and without damage, according to workplace requirements, manufacturer and component supplier specifications, established industry guidelines and relevant Australian standards</p> <p>3.2. Relevant measurements of engine sub-assemblies are made</p> <p>3.3. Engine sub-assemblies are adjusted without causing damage to components or systems</p>
4. Assemble engine blocks	<p>4.1. <b>Engine blocks are assembled</b> in correct order and without damage, according to workplace requirements, manufacturer and component supplier specifications, established industry guidelines and relevant Australian standards</p> <p>4.2. Relevant measurements of components are made</p> <p>4.3. Engine blocks are adjusted without causing</p>

ELEMENT	PERFORMANCE CRITERIA
	damage to components or system
5. Finalise assembly process	5.1. Final inspection is made to ensure work is to workplace requirements 5.2. Engine block is prepared for storage to workplace expectations 5.3. Workplace documentation is processed according to workplace procedures

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - clean parts using appropriate solutions and procedures
  - determine size and suitability of replacement components
  - measure to specified tolerances and dimensions
  - use appropriate tools for assembling engine blocks and sub-assemblies
  - perform necessary machining operations for assembling engine blocks and sub-assemblies
- communication skills to:
  - follow oral instructions
  - work as part of a team
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to use mathematical ideas and techniques to:
  - assess tolerances and clearances
  - calculate component dimensions to the required tolerances
- problem-solving skills to:
  - prevent time and material wastage
  - plan and sequence operations
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to use communication devices and computerised equipment to search and gather supporting material

### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety requirements, including:
  - personal protective equipment (PPE) for handling engine blocks and sub-assemblies and using chemical cleaning agents
  - correct operation of specialised equipment, such as heating torches, ovens and presses

- procedures for handling freezing substances, such as liquid nitrogen
- manual-handling techniques, including:
  - using machinery for lifting engine blocks and engine components
  - using slings, chains and other lifting equipment according to safe work practices
- procedures for clearance testing and adjusting or machining components, including:
  - piston to connecting rod big-end alignment
  - big-end bearing crush with bearing blue
  - piston ring end gap, back clearance and side clearance
  - bearing crush with bearing blue and measuring clearances
  - semi-flanged thrust bearings
  - finished camshaft bearings and measuring clearances
  - camshafts and cam followers
  - camshaft endfloat
  - crankshaft endfloat
  - gear backlash
  - oil pump sealing and pick-up oil piping
- procedures for assembling processes and components, including:
  - reasons for and methods of producing a clean assembly space
  - performing a final wash of components prior to re-assembly
  - welsh plugs and oil gallery plugs
  - piston and connecting rod assemblies
  - big-end bearings
  - piston rings to pistons
  - main bearings and thrust washers
  - semi-flanged thrust bearings
  - crankshafts, including protection measures for crankshaft journals, bearings, rings and bores
  - finished camshaft bearings
  - camshafts and cam followers
  - timing gears
  - chains and tensioners
  - oil pumps, oil squirters and oil pump pick-ups
  - balance shafts
  - fitting ancillary components, including covers and seals, housings, diesel fuel injection pumps, oil coolers, crankshaft pulleys, flywheels and bell-housings
- Australian standards relevant to engine reconditioning

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select methods and techniques for assembling engine blocks and sub-assemblies appropriate to the circumstances</li> <li>• complete the assembly of multi-cylinder blocks, including: <ul style="list-style-type: none"> <li>• measuring and checking against manufacturer and component supplier specifications</li> <li>• carrying out assembly to manufacturer and component supplier requirements without causing damage to components, tools or systems</li> </ul> </li> <li>• complete workplace and equipment records.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• multi-cylinder engines appropriate to the workplace,</li> </ul>

**Evidence Guide**

	<p>including in-line multi-cylinder engine and vee-configuration multi-cylinder engine blocks</p> <ul style="list-style-type: none"> <li>• fixed and portable hand, air and power tools, lifting equipment, torque wrench, measuring equipment and other equipment appropriate to assembling engine blocks and sub-assemblies</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with assembling engines</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>Appropriate tooling options</b> may include:	<ul style="list-style-type: none"> <li>• comparator gauges</li> <li>• ring compressors</li> <li>• hand tooling</li> <li>• plasti-gauge</li> <li>• power tooling</li> <li>• torque wrenches.</li> </ul>
<b>Tools and measuring equipment</b> may include:	<ul style="list-style-type: none"> <li>• clamps</li> <li>• dial indicators</li> <li>• inside and outside micrometers</li> <li>• lifting equipment.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• individual state or territory regulatory requirements</li> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> </ul> </li> </ul>

<b>Range Statement</b>	
	<ul style="list-style-type: none"> <li>• toxic substances</li> <li>• working in proximity to others and site visitors</li> <li>• PPE required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<b><i>Environmental requirements</i></b> include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>
<b><i>Technical information</i></b> may include:	<ul style="list-style-type: none"> <li>• manufacturer or supplier component specifications.</li> </ul>
<b><i>Support equipment</i></b> includes:	<ul style="list-style-type: none"> <li>• assembly bench</li> <li>• assembly trolleys</li> <li>• engine stands</li> <li>• lifting equipment.</li> </ul>
<b><i>Facilities</i></b> include:	<ul style="list-style-type: none"> <li>• dedicated engine assembly room</li> <li>• dust and gas exhaust units.</li> </ul>
<b><i>Pre-assembly cleaning</i></b> includes:	<ul style="list-style-type: none"> <li>• removing machining residue</li> <li>• ensuring gasket faces are clean and oil and water passageways are clear using tools, such as a rifle brush.</li> </ul>
<b><i>Engine components</i></b> include:	<ul style="list-style-type: none"> <li>• engine blocks, sleeves, crankshafts, camshafts, camshaft followers, piston and connecting rod assemblies, timing chains and gears, oil pumps, oil squirters and coolers</li> <li>• other variables, including ancillary systems and components, such as: <ul style="list-style-type: none"> <li>• cooling systems</li> <li>• exhaust systems</li> <li>• fuel systems.</li> </ul> </li> </ul>
<b><i>Replacement component parts</i></b> may include:	<ul style="list-style-type: none"> <li>• bearing sets</li> <li>• gasket sets</li> <li>• oil pumps</li> <li>• piston rings</li> <li>• pistons</li> <li>• seals</li> <li>• sleeves</li> <li>• timing chains and gears.</li> </ul>
<b><i>Clearances and tolerances that are measured</i></b> include:	<ul style="list-style-type: none"> <li>• back clearance and side clearance</li> <li>• bearing to journal clearances</li> <li>• endfloats</li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• gear backlashes</li> <li>• parent bore to dry sleeve fit</li> <li>• piston ring end-gap</li> <li>• piston to bore clearance</li> <li>• sleeve heights.</li> </ul>
<i>Clearances and tolerances that are adjusted</i> include:	<ul style="list-style-type: none"> <li>• adjusting gear backlash</li> <li>• machining semi-finished thrust bearings</li> <li>• machining piston protrusion and valve pockets</li> <li>• pin-boring connecting rod little-ends.</li> </ul>
<i>Assembling engine sub-assemblies</i> includes:	<ul style="list-style-type: none"> <li>• assembling, aligning and fitting: <ul style="list-style-type: none"> <li>• air brake compressors</li> <li>• oil coolers</li> <li>• oil pumps</li> <li>• pistons.</li> </ul> </li> </ul>
<i>Assembling engine blocks</i> includes:	<ul style="list-style-type: none"> <li>• fitting finished dry interference and slip-fit sleeves, chrome sleeves and wet sleeves</li> <li>• fitting crankshafts, piston assemblies, camshafts, camshaft followers, push rods, oil pumps, timing gears and timing chains</li> <li>• fitting balance weights and timing gears to crankshafts</li> <li>• fitting covers, seals, housings, flywheels and forced air induction assemblies.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Sector	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3005 Balance rotating and reciprocating engine components

### Modification History

Release	Comment
Release 2	Replaces AURTTM3005 Balance rotating and reciprocating engine components (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to balance engine rotating and reciprocating components. It includes identifying and confirming work requirements, preparing for work, balancing rotating and reciprocating engine components, and completing work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to a range of engine components in an engine reconditioning process. Engine cylinder blocks to be balanced may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.</p> <p>Work is carried out according to award provisions.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to balance rotating and reciprocating engine components	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is sourced, procedures and methods are analysed, and <b>appropriate tooling options</b> are selected for balancing engine components</p> <p>1.3. <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5. <b>Preparation for balancing</b> the rotating and reciprocating <b>engine components</b> is performed</p> <p>1.6. Balancing machine is prepared to accept component(s)</p>
2. Balance rotating engine components	<p>2.1. Component is mounted and engaged with machine</p> <p>2.2. <b>Balancing procedures of rotating engine component</b> are carried out to workplace requirements</p> <p>2.3. Rotating engine component is balanced without causing damage to component or system</p>
3. Balance reciprocating engine components	<p>3.1. Component is mounted and engaged with machine</p> <p>3.2. <b>Balancing procedures of reciprocating engine component</b> are carried out to workplace requirements</p> <p>3.3. Reciprocating engine component is balanced without causing damage to component or system</p>
4. Finalise balancing process	<p>4.1. Final inspection is made to ensure work is to workplace requirements</p> <p>4.2. Components are cleaned and/or stored to workplace expectations</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - identify worn and damaged machine mountings
  - mount and position components
  - set machining parameters to achieve job requirements and maximise tool life
  - set and measure components to specified tolerances and dimensions
  - use appropriate machines to correct imbalance of components
- communication skills to:
  - follow oral instructions
  - report deviations from specifications
  - work as part of a team
- literacy skills to:
  - read and interpret routine job instructions, specifications, drawings and standard operating procedures
  - record information for use in calculations
  - identify and analyse technical information
  - understand quality procedures
- numeracy skills to use mathematical ideas and techniques to:
  - assess tolerances
  - apply accurate measurements
  - calculate balancing requirements
  - establish quality checks
- problem-solving skills to:
  - locate, interpret and apply workplace policies and procedures, including manufacturer and component supplier procedures
  - identify and avoid planning and scheduling problems
  - prevent time and material wastage
  - organise work and plan processes
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to use communication devices and computerised equipment to:
  - search and gather supporting material
  - use interfaces to communicate with computerised controls

### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety requirements, including:
  - operating principles of component balancing, including:
    - static and dynamic balance
    - inertia
    - internally and externally balanced engines
    - reciprocating mass
    - rotating mass
    - sources of torsional vibration
    - gas pressure
    - purpose of counterweights, torsional vibration dampeners and balance shafts in balancing
    - difference between in-line engine balance, flat-plane and vee-type engine balance
- balancing procedures and techniques, including:
  - procedures for in-line engines, flat-plane crankshafts and vee-type engines
  - procedures for weight-matching the pistons and rod-ends
  - methods of calculating bob-weight values for vee-type engines, including:
    - rotating mass with oil allowance
    - reciprocating mass
    - effect of vee-angle on the total calculation
  - procedures for mounting bob-weights on crankshafts of vee-type engines
  - procedures for balancing internally balanced engines
  - procedures for balancing externally balanced engines
- procedures for adding and removing metal to the crankshaft, including:
  - drilling to remove weight
  - welding to add weight
  - machining and adding heavy metal

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• communicate effectively with others involved in or affected by the work</li> <li>• select methods and techniques to balance engine components appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• balance a range of crankshafts and components according to workplace, manufacturer and component supplier requirements</li> <li>• balance components within workplace timeframes</li> <li>• present components to customer according to workplace requirements.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to balancing rotating and</li> </ul>

<b>Evidence Guide</b>	
	<p>reciprocating engine components</p> <ul style="list-style-type: none"> <li>• equipment and hand and power tools appropriate to balancing rotating and reciprocating engine components</li> <li>• multi-cylinder engines appropriate to the workplace, including in-line multi-cylinder engine and vee-configuration multi-cylinder engine blocks</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Information</i></b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with balancing engine components</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b><i>Appropriate tooling options</i></b> may include:	<ul style="list-style-type: none"> <li>• comparator gauges and ring compressors</li> <li>• hand tooling</li> <li>• plasti-gauge</li> <li>• power tooling</li> <li>• torque wrenches.</li> </ul>
<b><i>Tools and measuring equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• balancing equipment</li> <li>• balancing weights</li> <li>• scales.</li> </ul>
<b><i>WHS requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• individual state or territory regulatory requirements</li> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• toxic substances</li> </ul> </li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• working in proximity to others and site visitors</li> <li>• personal protective equipment (PPE) required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<i>Environmental requirements</i> are to include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>
<i>Preparation for balancing</i> includes:	<ul style="list-style-type: none"> <li>• thoroughly cleaning all components</li> <li>• checking all components to ensure there is no further machining required.</li> </ul>
<i>Engine components to be balanced</i> include:	<ul style="list-style-type: none"> <li>• crankshafts</li> <li>• flywheels</li> <li>• piston and connecting rod assemblies.</li> </ul>
<i>Balancing procedures of rotating engine components</i> include:	<ul style="list-style-type: none"> <li>• using different machines to determine positions where material is to be removed or added</li> <li>• different methods of removing or adding weight to engine components, such as drilling, welding, machining and adding metal slugs.</li> </ul>
<i>Balancing procedures of reciprocating engine components</i> include:	<ul style="list-style-type: none"> <li>• using different scales and associated equipment to measure the weight of the piston and connecting rod assembly.</li> <li>• different methods of removing or adding weight to piston and connecting rod assembly, such as drilling, welding, machining and adding metal slugs.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Sector	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3006 Perform advanced machining and blueprinting of engine components

### Modification History

Release	Comment
Release 2	Replaces AURTTM3006 Perform advanced machining and blueprinting of engine components (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	This unit describes the performance outcomes required to compare components to original manufacturer and component supplier specifications and match them in relation to weight, size and capacity.  No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.
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### Application of the Unit

Application of the unit	Work applies to the blueprinting of internal combustion engine components. Engine cylinder blocks to be blueprinted and machined may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to blueprint engines	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is sourced, procedures and methods are analysed, and appropriate tooling options are selected for machining and blueprinting engines</p> <p>1.3. <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5. Measuring and/or calibration requirements for blueprinting and machining are determined</p> <p>1.6. Cylinder block and cylinder head are prepared for blueprinting and machining</p>
2. Measure components	<p>2.1. Information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>2.2. Components are measured and clearances and tolerances are calculated</p>
3. Machine components	<p>3.1. Components are adjusted and/or machined to meet manufacturer and component supplier specifications</p> <p>3.2. Blueprinting and machining of components are achieved without causing damage to components or system</p>
4. Finalise blueprinting and machining process	<p>4.1. Blueprinting schedule documentation is completed</p> <p>4.2. Final check is made to ensure finished work complies with workplace requirements</p> <p>4.3. Engine components are prepared for storage according to workplace requirements</p> <p>4.4. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - select and use machines required for blueprinting
  - measure to specified tolerances and dimensions
- communication skills to:
  - follow oral instructions
  - report deviations from specifications
  - interact with customers and team members
- literacy skills to:
  - read and interpret routine job instructions, specifications, drawings and standard operating procedures
  - identify and analyse technical information
  - understand quality procedures
- numeracy skills to use mathematical ideas and techniques to:
  - assess tolerances
  - apply accurate measurements
  - calculate material requirements
  - establish quality checks
- problem-solving skills to:
  - locate, interpret and apply workplace policies and procedures, including manufacturer and component supplier procedures
  - identify and avoid planning and scheduling problems
  - prevent time and material wastage
  - organise work and plan processes
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
  - technology skills to use communication devices to search and gather supporting material

### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety requirements, including:
  - personal protective equipment (PPE) for handling engine blocks and using machines
  - equipment relevant to blueprinting

- procedures for blueprinting cylinder block, including:
  - testing the engine block, including sonic testing and crack testing
  - line boring main tunnels to produce datum/zero point
  - chasing threads to remove debris
  - fitting bearings and checking crush with bearing blue
  - recording sizes of main bearing tunnel with bearings fitted
  - selecting bearings for correct grading and clearances
  - resizing connecting rods and fitting new bolts to ensure centre-to-centre length is correct
  - cross-drilling crankshaft to enhance oil flow
  - grinding crankshaft to suit bearings and to achieve desired clearance and phasing consistency
  - sleeving lifter bores to centreline of camshaft
  - fitting semi-finished camshaft bearings and line boring to ensure crankshaft to camshaft alignment
  - squaring up the deck to the crankshaft tunnel to ensure crankshaft is parallel to block
  - chasing head bolt retaining threads
  - fitting torque plate to bore and hone
  - honing cylinders, matching individual pistons to respective bores
  - dummy assembling to achieve consistent piston height for desired compression ratio and checking rotational clearance
  - setting ring end gap
- procedures to blueprint cylinder heads, including:
  - machining for larger valves
  - operating flow bench
  - porting for improved air flow and to balance combustion chambers
  - calculating capacity of individual combustion chambers and machining combustion chambers to achieve consistency
  - calculating compression ratio
  - selecting camshaft
  - setting valve heights
  - dialling camshaft
  - machining pistons to achieve desired compression ratio
  - setting rocker geometry, including length and sweep
- Australian standards relating to engine reconditioning

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select methods and techniques for machining and blueprinting appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• complete blueprinting of a range of engines to workplace requirements</li> <li>• conduct machining operations according to workplace, manufacturer and component supplier requirements</li> <li>• complete work without damage to tools and equipment or injury to persons.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> </ul>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"> <li>engines appropriate to the workplace, including in-line multi-cylinder engine blocks and vee-configuration multi-cylinder engine blocks</li> <li>fixed and portable hand, air and power tools, and equipment appropriate to blueprinting engines</li> <li>specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with machining and blueprinting engine components</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>Tools and measuring equipment</b> may include:	<ul style="list-style-type: none"> <li>• burette</li> <li>• degree wheel</li> <li>• dial indicator</li> <li>• dummy push rod</li> <li>• feeler gauge</li> <li>• flow bench</li> <li>• gauge for setting valve protrusion</li> <li>• micrometer</li> <li>• ring end gapper</li> <li>• sonic tester</li> <li>• valve spring tester.</li> </ul>
<b>OHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> </ul> </li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• manual and mechanical lifting and shifting</li> <li>• toxic substances</li> <li>• working in proximity to others and site visitors</li> <li>• PPE required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<i>Environmental requirements</i> are to include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Sector	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3007 Carry out grinding operations

### Modification History

Release	Comment
Release 2	Replaces AURTTM3007 Carry out grinding operations (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to carry out grinding operations on a range of engine components to specific tolerances. It involves determining engine damage and the required repair action, and preparing and using grinding machines with machine engine components to specifications and workplace requirements.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	Work applies to determining repair requirements and grinding in an engine reconditioning process. Engine cylinder components to be machined may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to carry out grinding operations	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is sourced, procedures and methods are analysed, and appropriate tooling options are selected for grinding engine components</p> <p>1.3. <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5. <b>Measuring and calibration requirements</b> for grinding are determined</p>
2. Grind engine components	<p>2.1. Component is measured prior to grinding to determine depth of grind</p> <p>2.2. Component is positioned in grinder and clamped</p> <p>2.3. Grinding is carried out according to workplace procedures and without causing damage to components or system</p> <p>2.4. Component is checked/measured with instruments to ensure compliance with specifications</p> <p>2.5. Grinding operations are completed to specifications</p>
3. Finalise grinding process	<p>3.1. Components are thoroughly cleaned</p> <p>3.2. Final inspection is made to ensure finished work complies with workplace requirements</p> <p>3.3. Engine components are prepared for storage according to workplace requirements</p> <p>3.4. Machined surfaces are treated with a protective coating to prevent rust if component is to be stored</p> <p>3.5. Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - select correct grinding wheel for the application
  - identify irregularities in the grinding process
  - set machining parameters to achieve job requirements and maximise tool life
  - use appropriate and sufficient clamping or mounting of the work piece
  - use coolant and lubricant correctly
  - measure to specified tolerances and dimensions
- communication skills to:
  - follow oral instructions
  - report deviations from specifications
  - interact with customers and team members
- literacy skills to:
  - read and interpret routine job instructions, specifications, drawings and standard operating procedures
  - identify and analyse technical information
  - understand quality procedures
- numeracy skills to use mathematical ideas and techniques to:
  - calculate time and assess tolerances
  - apply accurate measurements
  - calculate material requirements
  - establish quality checks
- problem-solving skills to:
  - locate, interpret and apply workplace policies and procedures, including manufacturer and component supplier procedures
  - identify and avoid planning and scheduling problems
  - prevent time and material wastage
  - organise work and plan processes
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to use communication devices and computerised equipment to:
  - search and gather supporting material
  - take, locate, download and view digital images

### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety requirements, including:
  - personal protective equipment (PPE) for using grinding machines and chemical cleaning and lubricating agents
  - hazards associated with rotating grinding machines
- manual-handling techniques relating to grinding crankshafts
- types, characteristics and limitations of crankshaft grinding machines, including:
  - hand-held grinding machines for oil hole dressing
  - types and grades of grinding wheels, including grit grades
- dismantling procedures of crankshafts, including:
  - numbering and removing counterweights
  - drive gears
  - oil seal sleeves and dowels
- inspection procedures, including:
  - identifying crankshaft material
  - identifying heat treatment process, including nitriding, tufftriding and induction hardening
  - identifying radius treatment, including deep fillet rolling, radius rolling and shot peening
  - checking alignment of crankshaft in vee-blocks
  - measuring journals against specifications and identifying damaged journals
- testing procedures of crankshaft, including:
  - crack testing coil shot and end shot
  - testing hardness of journals
- procedures for preparing the crankshaft grinding wheel, including:
  - wheel preparation, including selecting wheel to suit radius and journal width of crankshaft
  - dressing procedures of wheel, including:
    - types of diamonds for front and radius dressing
    - procedure for dressing the wheel to suit crankshaft radius
    - procedure for dressing front of wheel
- procedures for big-end grinding, including:
  - setting crankshaft rotation speed according to crankshaft material
  - setting crankshaft grinder wheelhead movement
  - measuring journal diameters and widths during grinding with constant measuring gauge
- procedures for adjusting the crankshaft grinder to suit main bearing journal grinding, including:
  - removing the crankshaft from the grinder
  - setting chuck offsets for main bearings and adjusting counter weights to suit
  - fitting the crankshaft in the correct direction of rotation and ensuring that

- critical surfaces are not damaged by the chuck
- setting datum in relation to rear flange and nose for main bearing grinding
- procedures for main bearing journal grinding, including:
  - setting crankshaft rotation speed according to crankshaft material
  - setting crankshaft grinder wheelhead movement
  - measuring journal diameters and widths during grinding with constant measuring gauge
- procedures for finishing journal grinding, including:
  - chamfering and dressing oil holes
  - finishing journals according to grade of belt and required finish
  - setting up and facing flange ends and seal areas
- final grinding inspections of crankshaft, including journal surface finish, taper, ovality, barrelling, hour-glass, grinding chatter and journal burning
- methods of correcting faults
- procedures for removing crankshaft from grinder and checking crankshaft for straightness in vee-blocks using dial indicator
- Australian standards relating to engine reconditioning

## Evidence Guide

Evidence Guide	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"><li>• observe safety procedures and requirements</li><li>• select methods and techniques for grinding operations appropriate to the circumstances</li><li>• complete preparatory activity in a systematic manner</li><li>• grind a range of engine components according to workplace, manufacturer and component supplier requirements</li><li>• complete work without damage to tools and equipment or injury to persons.</li></ul>

<b>Evidence Guide</b>	
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• crankshafts and camshafts appropriate to the workplace, including in-line multi-cylinder engine blocks and vee-configuration multi-cylinder engine blocks</li> <li>• fixed and portable hand, air and power tools and equipment appropriate to grinding operations</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p>

**Evidence Guide**

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.

Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with grinding engine components</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>Tools and measuring equipment</b> may include:	<ul style="list-style-type: none"> <li>• arbors</li> <li>• clamps</li> <li>• dial bore gauges</li> <li>• dial indicators</li> <li>• inside and outside micrometers.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• toxic substances</li> <li>• working in proximity to others and site visitors</li> </ul> </li> <li>• PPE required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<b>Environmental</b>	<ul style="list-style-type: none"> <li>• clean-up management</li> </ul>

Range Statement	
<i>requirements</i> are to include:	<ul style="list-style-type: none"><li>• dust and noise minimisation</li><li>• waste management.</li></ul>
<i>Measuring and calibration requirements</i> may include:	<ul style="list-style-type: none"><li>• determining journal diameters</li><li>• determining sizes of grind.</li></ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Sector	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3008 Dismantle and evaluate engine blocks and sub-assemblies

### Modification History

Release	Comment
Release 2	Replaces AURTTM3008 Dismantle and evaluate engine blocks and sub-assemblies (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to dismantle, inspect, evaluate and determine preferred repair action of engine block and sub-assemblies as part of an engine reconditioning process.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to a range of engine blocks and sub-assemblies in an engine reconditioning process.</p> <p>Engine blocks to be dismantled and evaluated may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to dismantle engine block and sub-assemblies	<p>1.1 <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2 <b>Information</b> is accessed, procedures and methods are analysed, and appropriate tooling options are selected for dismantling engines and sub-assemblies</p> <p>1.3 <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4 Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5 Engine is set up for dismantling using appropriate lifting equipment and avoiding fluid spillage</p> <p>1.6 Engine block and <b>sub-assemblies</b> are cleaned in line with appropriate environmental constraints, and <b>positions of auxiliary equipment</b> are recorded</p>
2. Dismantle engine block and sub-assemblies	<p>2.1. Correct information is accessed and interpreted from manufacturer or component supplier specifications</p> <p>2.2. Covers and ancillary components are removed, cleaned and stored without causing damage to components or system according to workshop requirements</p> <p>2.3. Engine blocks and sub-assemblies are dismantled and laid out in a logical order using approved methods, tools and equipment and without causing damage to components or system</p> <p>2.4. Component parts are cleaned using appropriate cleaning agents for the type of material and kept in a logical order in preparation for evaluation</p>
3. Determine repair procedures	<p>3.1. Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>3.2. Engine block and sub-assembly components are inspected, measured and tested against manufacturer and component supplier specifications and tolerances</p> <p>3.3. Inspection, measurement and testing are completed without causing damage to components or system</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.4.Engine block and sub-assembly components are evaluated against measurements, tests and inspections made</p> <p>3.5.Repair requirements are identified and reported according to workplace policy and procedures</p> <p>3.6.Workplace documentation is completed and dealt with in line with inspection, measurement and testing outcomes</p>
4. Finalise dismantle and evaluation processes	<p>4.1.Work performed is documented</p> <p>4.2.Final inspection is made to ensure safety features are in place</p> <p>4.3.Engine block and sub-assemblies are prepared for storage according to workplace requirements</p> <p>4.4.Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - dismantle engine blocks without causing damage to components
  - clean parts using appropriate solutions and procedures
  - identify components for re-use or replacement
  - check for abnormal wear and defects
  - check for conformance to specifications
  - measure to specified tolerances and dimensions
  - identify repair procedures
- communication skills to:
  - follow oral instructions
  - work as part of a team
- literacy skills to:
  - understand quality procedures
  - read, interpret and follow job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
- numeracy skills to use mathematical ideas and techniques to:
  - assess tolerances and clearances
  - apply accurate measurements
  - calculate component dimensions
- problem-solving skills to:
  - prevent time and material wastage
  - plan and sequence operations
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to use communication devices and computerised equipment to:
  - search and gather supporting material
  - take, locate, download and view digital images

### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety requirements, including:
  - personal protective equipment (PPE) for handling engine blocks and

- sub-assemblies and using chemical cleaning agents
- correct operation of specialised equipment, such as pullers
- manual-handling techniques, including:
  - using machinery for lifting engine blocks and engine components
  - using slings, chains and other lifting equipment according to safe work practices
- dismantling methods and procedures, including:
  - reasons for selecting the chosen tools, techniques and equipment
  - hazards and fluid control measures associated with the removal of engines and engine components, including housekeeping
  - pre-evaluation checks to determine suitability of component to be re-used
  - reasons for checking endfloats before disassembly
  - cleaning solutions and cleaning procedures of components
  - use of pullers, presses and specialised tools, and the application of heat to dismantle components, such as gears, pulleys and dowels
  - procedures for recording the facing directions of pistons, connecting rods, main and big-end caps and positions of removable counterweights and counterweight shafts assemblies
  - precautions to be aware of when removing the connecting rod cap in relation to snap-broken rods
  - removing crankshaft and identifying main bearing caps that have lost register
  - removing dry and wet sleeves
  - dismantling pistons from connecting rods
  - removing camshaft bearings and balance/idler shaft bearings
  - removing welsh plugs and oil gallery plugs
  - removing diesel injection pumps
  - dismantling components that have seized, bent or broken, including seized stud and bolt removal
- measuring, testing and evaluating procedures, including:
  - characteristics of surface finishes and wear patterns as applied to cylinder bores, crankshafts, pistons, gears, cam followers, camshafts, bearings and bushes, block facings, parting faces of connecting rod and main bearing caps
  - crack testing components
  - testing hardness of alloy cylinder blocks, pistons, crankshaft journals and camshaft followers
  - straightness of shafts
  - taper, ovality and wear of:
    - crankshaft and camshaft journals
    - main bearing and connecting rod tunnels
    - cylinder bores in conventional engine blocks and the parent bores of engine blocks with dry sleeves

- camshaft lobe lift
- main bearing tunnels for alignment
- connecting rod alignment and little-end bore size
- cylinder block flatness and deck height
- piston ring land clearance, piston skirt wear and gudgeon pin to piston clearance
- cylinder liner register in both the upper and lower parts of the cylinder block
- oil pump for serviceability
- idler gear hub to bearing clearance
- Australian standards relating to engine reconditioning

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select dismantling and evaluation methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• complete the dismantling and evaluation of a range of engine blocks and sub-assemblies</li> <li>• measure and check work against manufacturer and component supplier specifications</li> <li>• evaluate components according to workplace requirements and specifications</li> <li>• determine required repair procedures</li> <li>• complete the dismantling and evaluation of engine blocks and sub-assembly components within workplace timeframes</li> <li>• complete work without damage to tools and equipment or injury to persons.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> </ul>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• multi-cylinder engine blocks appropriate to the workplace, including those with and without cylinder sleeves</li> <li>• equipment and hand, air and power tools appropriate to dismantling and evaluating engine blocks and sub-assembly components</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with dismantling engine components</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>Tools and measuring equipment</b> may include:	<ul style="list-style-type: none"> <li>• depth micrometers</li> <li>• dial bore gauges</li> <li>• dial indicators</li> <li>• inside and outside micrometers</li> <li>• pullers</li> <li>• other specialised tools.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• individual state or territory regulatory requirements</li> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• toxic substances</li> <li>• working in proximity to others and site visitors</li> </ul> </li> <li>• PPE required by legislation, regulations, codes of</li> </ul>

Range Statement	
	practice and workplace policies and procedures.
<i>Environmental requirements</i> are to include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>
<i>Sub-assemblies</i> include:	<ul style="list-style-type: none"> <li>• balance shafts</li> <li>• bearings</li> <li>• belts and pulleys</li> <li>• camshafts</li> <li>• chains</li> <li>• connecting rods</li> <li>• crankshafts</li> <li>• cylinder barrels</li> <li>• cylinder head assemblies</li> <li>• cylinder liners (wet and dry)</li> <li>• gears</li> <li>• idler shafts</li> <li>• oil pumps</li> <li>• pistons</li> <li>• rings.</li> </ul>
<i>Positions of auxiliary equipment</i> may include:	<ul style="list-style-type: none"> <li>• clamps</li> <li>• missing parts</li> <li>• mounting brackets</li> <li>• position of sensors.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Sector	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3009 Fit sleeves and bore and hone engine cylinders

### Modification History

Release	Comment
Release 2	Replaces AURTTM3009 Fit sleeves and bore and hone engine cylinders (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to fit sleeves to restore engine cylinder blocks and to bore and hone the sleeves to specific tolerances. It involves assessing damage to engine cylinders and determining the required repair action. It requires the ability to fit sleeves as a method of cylinder repair and prepare and use boring and honing machines to machine engine cylinders to specifications and workplace requirements.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	Work applies to sleeving, reboring and honing in an engine reconditioning process. Engine cylinders to be sleeved, bored and honed may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to bore cylinders	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is accessed, procedures and methods are analysed, and appropriate tooling options are selected for fitting sleeves and boring and honing engine blocks</p> <p>1.3. <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5. <b>Measuring and/or calibration</b> for boring is performed</p> <p>1.6. Engine cylinder block is <b>prepared for boring</b></p> <p>1.7. <b>Reboring machine is prepared</b> to accept cylinder block or barrel</p> <p>1.8. Cylinder block is positioned, securely clamped and limit stop is set</p>
2. Bore cylinders	<p>2.1. Boring operations are performed without causing damage to components or system</p> <p>2.2. Cylinders are checked/measured with instruments to ensure compliance with specifications</p> <p>2.3. Boring operations are completed to required specifications and honing allowances</p>
3. Prepare to sleeve cylinder block	<p>3.1. Tools and equipment for sleeving are selected, checked and prepared for operation</p> <p>3.2. Measuring and/or calibration requirements for sleeving are determined and required sleeve is selected</p> <p>3.3. Engine cylinder block is prepared for sleeving</p>
4. Sleeve engine cylinder blocks	<p>4.1. Sleeving operations are performed without causing damage to components or system</p> <p>4.2. Measuring operations are performed to ensure compliance with specifications</p> <p>4.3. Boring operations are completed to required specifications and honing allowances</p>
5. Prepare cylinders for honing operations	<p>5.1. Tools and equipment for honing are selected, checked and prepared for operation</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>5.2.Measuring and/or calibration requirements for honing are determined</p> <p>5.3.Bored cylinder is cleaned of residue and swarf, using appropriate cleaning materials for the component</p> <p>5.4.Honing machine is prepared to accept cylinder block or barrel</p> <p>5.5.Cylinder is positioned and securely clamped, and required hone stroke is set</p> <p>5.6.Hone stones are selected and speed is set to achieve required finish and cross hatch</p>
6. Hone cylinders	<p>6.1.Cylinder is honed at correct speed and rate to required finish without causing damage to components or system</p> <p>6.2.Components are checked/measured with instruments to ensure compliance with specifications</p> <p>6.3.Honing operations are completed to specifications, ensuring required piston to bore clearance is achieved</p>
7. Finalise sleeving, boring and honing processes	<p>7.1.Cylinder is thoroughly cleaned of residue honing oil</p> <p>7.2.Final inspection is made to ensure finished work complies with workplace requirements</p> <p>7.3.Machined surfaces are treated with a protective coating to prevent rust if cylinder engine block is to be stored</p> <p>7.4.Engine cylinder block is prepared for storage according to workplace requirements</p> <p>7.5.Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - select correct replacement tip or sharpen tool for material to be bored
  - identify worn and damaged cutting tools
  - mount and position cutting tools
  - set machining parameters to achieve job requirements and maximise tool life
  - use appropriate and sufficient clamping and mounting of the work piece
  - use coolant and lubricant correctly
  - check for conformance to specifications
  - measure to specified tolerances and dimensions
- communication skills to:
  - follow oral instructions
  - report deviations from specifications
  - interact with customers and team members
- literacy skills to:
  - read and interpret routine job instructions, specifications, drawings and standard operating procedures
  - identify and analyse technical information
  - understand quality procedures
- numeracy skills to use mathematical ideas and techniques to:
  - calculate time
  - assess tolerances
  - apply accurate measurements
  - calculate material requirements
  - establish quality checks
- problem-solving skills to:
  - locate, interpret and apply workplace policies and procedures, including manufacturer and component supplier procedures
  - identify and avoid planning and scheduling problems
  - prevent time and material wastage
  - organise work and plan processes
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to use communication devices and computerised equipment to search and gather supporting material

**Required knowledge**

- WHS regulations and requirements, equipment, material and personal safety requirements, including:
  - personal protective equipment (PPE) for handling engine cylinder blocks, using boring and honing machines, and using chemical cleaning and lubricating agents
  - hazards associated with rotating boring and honing tools
- types and application of sleeves, including:
  - dry sleeves, including:
    - interference fit parallel sleeve
    - interference fit flanged sleeves
    - chrome-type finished-to-size dry flanged sleeves
  - wet sleeves, including:
    - flanged
    - stepped
- sleeve fitting procedures, including:
  - fitting interference sleeves, including fitting parallel sleeves to step in parent bore
  - fitting wet sleeves
- types, characteristics and limitations of honing and boring machines, including:
  - types and grades of boring tools
  - types and grades of honing stones
  - hand-held and machine-operated hones
- tool sharpening methods, including:
  - maintaining sharpness of tool throughout boring operations
  - compensation methods for tool wear throughout boring operations
- boring methods and procedures, including:
  - determining required size of bore, including honing allowance
  - preparing the engine cylinder block for boring and setting engine cylinder block into boring machine, including jigs, rails and clamps
  - setting the boring tool to the correct diameter, locking the boring tool and setting the limit stop
  - reasons for taking a test cut
  - speed and feed rates of the boring tool for differing materials, such as alloysil or nicolsil, and for bore diameters
  - methods for setting the speed and feed rate of the boring tool
- honing methods and procedures, including:
  - cleaning the engine cylinder block before and after honing
  - preparing portable and stationary honing machines, setting engine cylinder block into honing machine and setting hone stroke

- setting honing speeds and feed rates to achieve required finish
- methods of measuring bores for taper, ovality and barrelling
- types and application of cleaning, lubricating and protective agents, including:
  - material suitability
  - application of lubricating agents for different speeds and feed rates of boring machines and honing machines
  - hazards associated with chemical cleaning and lubricating agents
- Australian standards relating to engine reconditioning

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select boring and honing methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• fit a range of sleeves to engines according to workplace, manufacturer and component supplier requirements</li> <li>• bore and hone a range of multi-cylinder engines according to workplace, manufacturer and component supplier requirements</li> <li>• complete work without damage to tools and equipment, or injury to persons.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p>

<b>Evidence Guide</b>	
	<ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• multi-cylinder engine blocks appropriate to the workplace, including in-line multi-cylinder engine blocks and vee-configuration multi-cylinder engine blocks</li> <li>• fixed and portable hand, air and power tools and equipment appropriate to reboring and honing cylinders and barrels</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with fitting sleeves to engine cylinder blocks and boring and honing engine cylinders</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>Tools and measuring equipment</b> may include:	<ul style="list-style-type: none"> <li>• arbors</li> <li>• clamps</li> <li>• dial bore gauges</li> <li>• dial indicators</li> <li>• inside and outside micrometers</li> <li>• press</li> <li>• pullers.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• individual state or territory regulatory requirements</li> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• toxic substances</li> </ul> </li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• working in proximity to others and site visitors</li> <li>• PPE required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<i>Environmental requirements</i> are to include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>
<i>Measuring and/or calibrating</i> may include:	<ul style="list-style-type: none"> <li>• determining piston to bore clearance</li> <li>• determining sizes of cut</li> <li>• determining required honing allowance.</li> </ul>
<i>Preparing for boring</i> may include:	<ul style="list-style-type: none"> <li>• removing main bearings from engine block</li> <li>• fitting a torque plate to engine block.</li> </ul>
<i>Preparing reboring machine</i> must include:	<ul style="list-style-type: none"> <li>• clamps</li> <li>• jigs</li> <li>• rails.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Sector	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3010 Heat treat, straighten and reclaim engine components

### Modification History

Release	Comment
Release 2	Replaces AURTTM3010 Heat treat, straighten and reclaim engine components (Release 1) Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to use industry-accepted methods to apply heat treatment and straightening techniques when reclaiming engine components.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to determining repair requirements and reclaiming engine components in an engine reconditioning process. Engine components to be reclaimed may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake heat treatment procedures	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is accessed, procedures and methods are analysed, and appropriate tooling options are selected for reclaiming engine components</p> <p>1.3. <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5. Engine component is <b>prepared</b> for heat treatment</p>
2. Heat treat engine components for reclamation	<p>2.1. Engine component specifications are accessed and interpreted from manufacturer and component supplier information to determine heat treatment method</p> <p>2.2. Heat treating methods are used to repair damaged or undersized <b>engine components</b></p> <p>2.3. <b>Reclamation method</b> is completed in readiness for further repair</p> <p>2.4. Work is completed without causing damage to components or system</p> <p>2.5. Components are measured against manufacturer and component supplier specifications and allowable tolerances</p>
3. Straighten engine components for reclamation	<p>3.1. Engine component specifications are accessed and interpreted from manufacturer and component supplier information to determine straightening method</p> <p>3.2. Components are mounted and clamped in straightening equipment</p> <p>3.3. Engine components are straightened using acceptable reconditioning methods to comply with Australian standards</p> <p>3.4. Work is completed without causing damage to components or system</p> <p>3.5. Components are measured against manufacturer and component supplier specifications and allowable tolerances</p>
4. Perform necessary	4.1. Components are machined and finished to

ELEMENT	PERFORMANCE CRITERIA
machining to reclaim components	specifications in readiness for assembly
5. Finalise repair processes	5.1. Surfaces are protected with a rust-prevention solution 5.2. Components are stored to workplace requirements 5.3. Workplace documentation is processed according to workplace procedures

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - prepare heat treatment and engine component straightening tools
  - use workplace technology relating to reclaiming engine components, including specialist reclamation tools and equipment, measuring equipment and computerised technology
  - apply techniques to prevent and rectify distortion
  - sharpen, shape and dress cutting and grinding tools
  - identify worn and damaged cutting and grinding tools
  - mount and position cutting and grinding tools
  - set machining parameters to achieve job requirements and maximise tool life
  - use appropriate and sufficient clamping and mounting of work piece
  - use coolant and lubricant correctly
  - measure to specified tolerances and dimensions
- communication skills to:
  - follow oral instructions
  - report deviations from specifications
  - interact with customers and team members
- literacy skills to:
  - read and interpret routine job instructions, specifications, drawings and standard operating procedures
  - identify and analyse technical information
  - understand quality procedures
- numeracy skills to use mathematical ideas and techniques to:
  - calculate time
  - assess tolerances
  - apply accurate measurements
  - calculate material requirements
  - establish quality checks
- problem-solving skills to:
  - locate, interpret and apply workplace policies and procedures, including manufacturer and component supplier procedures
  - identify and avoid planning and scheduling problems
  - prevent time and material wastage
  - organise work and plan processes
- planning and organising skills to:
  - make good use of time and resources

<ul style="list-style-type: none"><li>• set priorities</li><li>• monitor own performance</li><li>• self-management skills to:<ul style="list-style-type: none"><li>• manage risks and hazards associated with:<ul style="list-style-type: none"><li>• applying heat to engine components</li><li>• operating cutting and grinding machinery</li></ul></li><li>• optimise workflow and productivity</li></ul></li></ul>
<b>Required knowledge</b>
<ul style="list-style-type: none"><li>• WHS regulations and requirements, equipment, material and personal safety requirements, including personal protective equipment (PPE) for handling engine components and using specialised equipment, such as:<ul style="list-style-type: none"><li>• heating torches</li><li>• ovens</li><li>• presses</li><li>• straightening tools</li></ul></li><li>• types, characteristics, uses and limitations of reclamation techniques</li><li>• dangers of working with heating equipment</li><li>• effects of heat on different metals and heating procedures</li><li>• component straightening techniques</li><li>• hardening and tempering techniques, including:<ul style="list-style-type: none"><li>• thermal stress relieving to stabilise crankshafts</li><li>• applying tuffride and nitride</li></ul></li><li>• Australian standards relating to engine reconditioning</li></ul>

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• communicate effectively with others involved in or affected by the work</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• reclaim a range of engine components according to workplace, manufacturer and component supplier requirements</li> <li>• complete the reclamation of a range of engine components within workplace timeframes</li> <li>• complete work without damage to tools and equipment or injury to persons.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources should be made available for the</p>

<b>Evidence Guide</b>	
	<p>assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• crankshafts, camshafts, balance shafts and engine cylinder head assemblies</li> <li>• material relevant to reclaiming engine components</li> <li>• equipment and hand and power tools appropriate to reclaiming engine components</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the heat treatment, straightening and reclaiming of engine components</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>Tools and measuring equipment</b> may include:	<ul style="list-style-type: none"> <li>• clamps</li> <li>• dial indicators</li> <li>• hand and power tools</li> <li>• inside and outside micrometers</li> <li>• lifting equipment</li> <li>• magnetic chuck</li> <li>• milling machine</li> <li>• surface grinder</li> <li>• welding equipment.</li> </ul>
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>• individual state or territory regulatory requirements</li> <li>• operational risk assessment and treatments associated with: <ul style="list-style-type: none"> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• toxic substances</li> </ul> </li> </ul>

Range Statement	
	<ul style="list-style-type: none"> <li>• working in proximity to others and site visitors</li> <li>• PPE required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<i>Environmental requirements</i> are to include:	<ul style="list-style-type: none"> <li>• clean-up management</li> <li>• dust and noise minimisation</li> <li>• waste management.</li> </ul>
<i>Preparation</i> may include:	<ul style="list-style-type: none"> <li>• cleaning the component using appropriate cleaning methods</li> <li>• fitting and clamping the component.</li> </ul>
<i>Engine components</i> may include:	<ul style="list-style-type: none"> <li>• alloy and cast iron cylinder heads</li> <li>• balance shafts</li> <li>• camshafts</li> <li>• crankshafts</li> <li>• piston and connecting rod assemblies.</li> </ul>
<i>Reclamation methods</i> will include:	<ul style="list-style-type: none"> <li>• hardening and tempering engine components</li> <li>• machining engine components</li> <li>• straightening engine components.</li> </ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Sector	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTM3011 Recondition engine cylinder heads

### Modification History

Release	Comment
Release 2	Replaces AURTTM3011 Recondition engine cylinder heads (Release 1)  Reference to OHS legislation replaced with new WHS legislation

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to recondition engine cylinder heads according to workplace requirements. It involves determining engine cylinder head damage and required repair action, and preparing and using reconditioning machines.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at time of endorsement.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to reconditioning cylinder heads in an engine reconditioning setting. Engine cylinder heads to be reconditioned are to include overhead valve and overhead camshaft and may include those of light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor.

### Pre-Requisites

not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake cylinder head reconditioning	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <b>Information</b> is accessed, procedures and methods are analysed, and appropriate tooling options are selected for reconditioning engine <b>cylinder heads</b></p> <p>1.3. <b>Tools and measuring equipment</b> are checked and prepared for operation</p> <p>1.4. Safe operating procedures and <b>workplace health and safety (WHS)</b> and <b>environmental requirements</b> are observed throughout the work</p> <p>1.5. Cylinder head is cleaned</p>
2. Dismantle cylinder head	<p>2.1. Cylinder head component specifications are accessed and interpreted from manufacturer and component supplier information to determine correct dismantling procedure</p> <p>2.2. Cylinder head is dismantled and laid out in a logical order using approved methods, tools and equipment without causing damage to components or systems</p> <p>2.3. Component parts are cleaned using cleaning agents appropriate to the type of material and kept in a logical order in preparation for evaluation</p>
3. Use methods to check/test cylinder head	<p>3.1. Cylinder head is pressure and/or crack tested</p> <p>3.2. Cylinder head and components are <b>inspected, measured and tested</b> against manufacturer and component supplier specifications</p> <p>3.3. Inspection, measurement and testing are completed without causing damage to component or system</p>
4. Recondition component parts	<p>4.1. Components are <b>adjusted and/or machined</b> to meet manufacturer and component supplier specifications</p> <p>4.2. Adjustments and/or machining of components are achieved without causing damage to components or system</p> <p>4.3. Work is carried out according to established industry guidelines</p>
5. Assemble cylinder head	<p>5.1. Cylinder head is assembled without causing damage to components or system</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>5.2.Assembly is carried out to comply with manufacturer and component supplier specifications, established industry guidelines and Australian standards</p> <p>5.3.Assembly activities are carried out according to industry regulations and guidelines, OHS legislation, and workplace procedures and policies</p>
6. Carry out testing and adjustment procedures	<p>6.1.Testing and adjustment are carried out to comply with manufacturer and component supplier specifications, established industry guidelines and Australian standards</p> <p>6.2.Tests and adjustments are completed without causing damage to components or system</p> <p>6.3.Tests and adjustments are performed using industry-approved procedures and equipment</p>
7. Finalise cylinder head reconditioning	<p>7.1.Work performed is documented</p> <p>7.2.Final inspection is made to ensure surfaces are protected</p> <p>7.3.Engine cylinder head is prepared for storage according to workplace requirements</p> <p>7.4.Workplace documentation is processed according to workplace procedures</p>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- technical skills to:
  - select correct replacement tip or sharpening tool for material to be machined
  - identify worn and damaged cutting tools, pilots and arbors
  - mount and position cutting tools
  - set machining parameters to achieve job requirements and maximise tool life
  - use appropriate and sufficient clamping or mounting of the work piece
  - check that valve seats conform to specifications and workplace requirements
  - set and measure adjustments to specified tolerances and dimensions
- communication skills to:
  - follow oral instructions
  - report deviations from specifications
  - interact with customers and team members
- literacy skills to:
  - read and interpret routine job instructions, specifications, drawings and standard operating procedures
  - identify and analyse technical information
  - understand quality procedures
- numeracy skills to use mathematical ideas and techniques to:
  - calculate time
  - assess tolerances
  - apply accurate measurements
  - calculate material requirements
  - establish quality checks
- problem-solving skills to:
  - locate, interpret and apply workplace policies and procedures, including manufacturer and component supplier procedures
  - identify and avoid planning and scheduling problems
  - prevent time and material wastage
  - organise work and plan processes
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice and operating procedures
- technology skills to use communication devices and computerised equipment to:
  - search and gather supporting material

- take, locate, download and view digital images

### Required knowledge

- WHS regulations and requirements, equipment, material and personal safety requirements, including personal protective equipment (PPE) for handling engine cylinder heads and using specialised equipment, such as:
  - facing machines
  - valve refacers
  - valve spring compressors
  - ovens and presses
- procedures for removing cylinder head from engine block
- dismantling methods and procedures
- cleaning methods and procedures
- procedures for measuring, testing and evaluating cylinder heads, including:
  - testing hardness of aluminium alloy cylinder heads and procedures for re-hardening aluminium alloy cylinder heads
  - visual inspections
  - cylinder head crack testing, including:
    - dye-penetrant testing
    - wet and dry magnetic particle testing
    - vacuum testing
    - pressure testing
  - inspecting valve guides and valve seats
- procedures for measuring, testing and evaluating associated parts, including inspecting camshafts, valves, valve springs, valve spring seats, valve spring retainers, collets and lash caps, rocker arms, rocker shafts and pushrods
- procedures for repairing cylinder heads and associated components, including:
  - heat treating aluminium alloy cylinder heads
  - straightening cylinder heads
  - repairing cracks in cylinder heads
  - welding aluminium alloy and cast iron cylinder heads
  - types of surface finishes for different cylinder head gaskets
  - surfacing cylinder heads, including manifold faces
  - repairing valve guides, valve seats, rocker arms and rocker shafts
  - refacing valves in valve refacer
  - fitting injector tubes and pre-combustion chambers
  - cleaning cylinder heads of residue and swarf
- procedures for assembling cylinder heads, including:
  - refitting welsh plugs and oil gallery plugs, valves, springs, spring seats, retainers, collets lash caps, camshafts, rocker gear, cam followers and associated components

- reasons for setting valve timing before fitting cylinder head to block
- evaluating and setting rocker arm geometry
- preparing cylinder block to accept cylinder head
- fitting head gaskets and cylinder heads to engine blocks
- tightening procedures of cylinder head bolts
- Australian standards relating to engine reconditioning

## Evidence Guide

<b>Evidence Guide</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select reconditioning methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• conduct reconditioning of a range of cylinder heads according to workplace, manufacturer and component supplier requirements</li> <li>• complete reconditioning of cylinder heads within workplace timeframes</li> <li>• complete work without damage to tools and equipment or injury to persons.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• appropriate worksite</li> <li>• cylinder heads appropriate to the workplace,</li> </ul>

<b>Evidence Guide</b>	
	<p>including multi-valve, OHV and OHC cylinder heads</p> <ul style="list-style-type: none"> <li>• fixed and portable hand, air and power tools and equipment appropriate to reconditioning cylinder heads</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.</p> <p>Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

Range Statement	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Information</b> may include:	<ul style="list-style-type: none"> <li>• Australian standards</li> <li>• engineer's design specifications and instructions</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• workplace specifications and requirements</li> <li>• regulatory and legislative requirements relating to the automotive industry, including Australian Design Rules</li> <li>• safe work procedures relating to the operation of machinery associated with reconditioning cylinder heads</li> <li>• verbal, written and graphical instructions, signage, work schedules, plans, specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches.</li> </ul>
<b>Cylinder heads</b> may include:	<ul style="list-style-type: none"> <li>• overhead cam (OHC)</li> <li>• overhead valve (OHV).</li> </ul>
<b>Tools and measuring equipment</b> may include:	<ul style="list-style-type: none"> <li>• arbors</li> <li>• clamps</li> <li>• depth micrometer</li> <li>• dial bore gauge</li> <li>• dial indicator</li> <li>• inside and outside micrometer</li> <li>• inside calliper</li> <li>• shim grinder</li> <li>• snap gauge</li> <li>• surfacing machine</li> <li>• vacuum tester</li> <li>• valve refacing machine</li> <li>• valve spring tester.</li> </ul>

Range Statement	
<b>WHS requirements</b> may include:	<ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with:               <ul style="list-style-type: none"> <li>electrical safety</li> <li>machinery movement and operation</li> <li>manual and mechanical lifting and shifting</li> <li>toxic substances</li> <li>working in proximity to others and site visitors</li> </ul> </li> <li>PPE required by legislation, regulations, codes of practice and workplace policies and procedures.</li> </ul>
<b>Environmental requirements</b> are to include:	<ul style="list-style-type: none"> <li>clean-up management</li> <li>dust and noise minimisation</li> <li>waste management.</li> </ul>
<b>Inspected, measured and tested</b> may include:	<ul style="list-style-type: none"> <li>visual checking</li> <li>pressure checking procedures</li> <li>crack testing procedures</li> <li>tolerance checking procedures.</li> </ul>
<b>Adjustments/machining</b> may include:	<ul style="list-style-type: none"> <li>surface finishing</li> <li>seat cutting and replacement</li> <li>guide replacement</li> <li>valve grinding</li> <li>tensioning procedures.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical Miscellaneous
<b>Sector</b>	Technical - Manufacture

## Custom Content Section

Not applicable.

## AURTTQ2001 Service final drive assemblies

### Modification History

Release	Comment
Release 1	Replaces AURT212670A Service final drive assemblies Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out testing and servicing of final drive assemblies and associated components in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of results, servicing of final drive assemblies and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence refers to work associated with servicing final drive assemblies on light and heavy vehicles, outdoor power equipment and motorcycles.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to undertake tests of final drive assemblies and associated components</b>	1.1.Nature and scope of work requirements are identified and confirmed 1.2.Operating principles of gear assemblies are explained and understood 1.3.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.4.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.5.Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures 1.6.Resources required for the testing of final drive assemblies and associated components are sourced and support equipment is identified and prepared 1.7.Warnings in relation to working with final drive assemblies and associated components are observed
<b>2. Test final drive assemblies and analyse results</b>	2.1.System tests are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications 2.2.Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is processed in accordance with workplace procedures
<b>3. Prepare to service final drive assemblies and associated components</b>	3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2.Procedures and information required are identified and sourced 3.3.Resources required for servicing final drive assemblies are identified and support equipment is identified and prepared
<b>4. Carry out service</b>	4.1.Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications 4.2.Adjustments made during the service are in

ELEMENT	PERFORMANCE CRITERIA
	accordance with manufacturer/component supplier specifications
<b>5. Prepare vehicle/ equipment for use or storage</b>	5.1. Service schedule documentation is completed 5.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place 5.3. Final inspection is made to ensure work is to workplace expectations 5.4. Vehicle/equipment is cleaned for use or storage to workplace expectations 5.5. Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for the identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and servicing of final drive assemblies, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- operating principles of final drive assemblies
- identification of application, purpose and operating principles
- inspection procedures
- final drive assembly service procedures
- final drive assembly enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting test results
- conducting the service in accordance with workplace and manufacturer/component supplier requirements
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of final drive assemblies
- equipment, hand and power tooling appropriate to the inspection and servicing of final drive assemblies
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Servicing**

Servicing to include fluids, filters, adjustments and operational testing, visual inspections and documents

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances manual lifting and shifting, machinery movement and operation, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include lubricants, minor parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection and servicing of final drive assemblies</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Driveline and Final Drives
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## AURTTQ2002 Remove and refit driveline components

### Modification History

Release	Comment
Release 1	Replaces AURT213165A Remove and refit driveline components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to remove and refit driveline components during rectification of faults in steering and suspension systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit applies to all types of driveline components fitted to light vehicles, which includes 4WD vehicles and light commercial vehicles.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, removal and refitting of driveline components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves removing and refitting various driveline system components to carry out required rectification procedures for steering and suspension systems.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in undertaking environmentally sound work practices.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to test and repair driveline components</b>	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for testing and repairing drivelines are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with drivelines are observed</p>
2. <b>Remove driveline components</b>	<p>2.1.Removal procedure information is accessed and interpreted from technical publications prior to removal of components</p> <p>2.2.System components are removed using hand tooling and specialist equipment without causing damage and stored in an appropriate location</p> <p>2.3.Identified component faults are reported to the customer and discussed for further instructions</p>
3. <b>Refit and adjust driveline components</b>	<p>3.1.Removed components are examined for serviceability prior to commencing the refitting procedures</p> <p>3.2.Serviceable components are refitted according to manufacturer/component supplier specifications and instructions</p> <p>3.3.Fluids and lubricants required during the refitting procedures are used in accordance with WHS and manufacturer/component supplier specifications</p> <p>3.4.Refitted components are adjusted according to manufacturer/component supplier specifications</p>
4. <b>Prepare vehicle/ equipment for use or storage</b>	<p>4.1.Repair schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure safety requirements are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal and refitting of driveline components, including the use of electronics, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- principles of driveline operation
- principles and construction of constant velocity joints
- construction and operation of FWD driveshafts
- types and layout of service/repair manuals (hard copy and electronic)
- dismantling, assembling and adjusting procedures
- methods of using lubricants and sealants
- methods of fitting circlips

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organization and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting removal and refitting in accordance with workplace and manufacturer/component supplier requirements
- accurately interpreting test results
- completing removal and refitting of driveline components and associated components within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the removal and refitting of driveline components
- equipment, hand and power tooling appropriate to the removal and refitting of driveline components
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

	<p>of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**System components**

Types of system components may include FWD driveshafts, independent rear suspension driveshafts and constant velocity joints

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling and jacking equipment
<b>Materials</b>	Materials may include cleaning materials, lubricants and sealants
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault

**RANGE STATEMENT**

	reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the removal and refitting of driveline components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURTTQ2003 Service final drive (driveline)

### Modification History

Release	Comment
Release 1	Replaces AURT213170A Service final drive (driveline) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the servicing of final drive drivelines in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection of drivelines, the analysis of inspections results, servicing of drivelines and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence refers to work associated with servicing final drives (drivelines), including light and heavy vehicles and agricultural equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake inspections and servicing of drivelines	<p>1.1.Nature and scope of work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</p> <p>1.4.Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures</p> <p>1.5.Resources required for inspection and servicing of drivelines are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with rotating devices are observed</p>
2. Conduct inspections and analyse results	<p>2.1.Inspections are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications</p> <p>2.2.Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is forwarded to persons for action in accordance with workplace procedures</p>
3. Carry out service	<p>3.1.Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.Adjustments made during the service are in accordance with manufacturer/component supplier specifications</p>
4. Prepare equipment/ vehicle for use or storage	<p>4.1.Service schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Equipment/vehicle is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing of final drive drivelines and associated components, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled and tracked vehicles
- identification of application, purpose and operating principles
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications
- accurately interpreting inspection results
- completing service of drivelines and associated components within workplace timeframes
- vehicle is presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the servicing of final drive drivelines and associated components
- equipment, hand and power tooling appropriate to the servicing of final drive drivelines and associated components
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Variables**

Variables include:

- universal joints and their alignment

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• constant velocity joints</li> <li>• centre bearings</li> </ul>
<b>Servicing</b>	Servicing to include fluids, filters, adjustments and operational testing, visual inspections and documents
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, machinery movement and operation, manual lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities

<b>RANGE STATEMENT</b>	
	administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and grease guns
<b>Materials</b>	Materials may include lubricants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the servicing of final drive drivelines and associated components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Driveline and Final Drives
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## AURTTQ4004 Overhaul final drive assemblies

### Modification History

Release	Comment
Release 1	Replaces AURT412645A Overhaul final drive assemblies Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the overhaul of gear, chain and tracked type final drive assemblies.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of the work requirement, preparation for work, testing and analysis of results, overhauling of final drive assemblies and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes light and heavy vehicles, including wheeled and tracked driven, motorcycles and outdoor power equipment.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake the overhaul of final drive assemblies	<p>1.1.Nature and scope of the work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for the testing and overhaul of final drive assemblies are sourced and support equipment is identified and prepared</p> <p>1.6.Warnings in relation to working with gear, chain and tracked type assemblies are observed</p>
2. Test final drive assemblies and analyse result	<p>2.1.Methods for the conduct of the system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is processed in accordance with workplace procedures</p>
3. Carry out the overhaul	<p>3.1.Methods for the conduct of the overhaul are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2.All adjustments made during the overhaul are in accordance with manufacturer/component supplier specifications</p>
4. Prepare vehicle/machine for use or storage	<p>4.1.Overhaul schedule documentation is completed</p> <p>4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle/machine is cleaned for use or stored to</p>

ELEMENT	PERFORMANCE CRITERIA
	workplace expectations 4.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the overhaul of final drive assemblies, including the use of measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled and tracked type vehicles and equipment
- identification of the application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- identification of wear evaluation methods
- types and layout of service/repair manuals (hard copy and electronic)
- final drive assembly test procedures
- final drive assembly overhaul procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of the application, purpose and operation
- application of the full overhaul sequence as per the Range Statement relative to the qualification being sought
- interpreting the test results
- conducting the overhaul in accordance with workplace and manufacturer/component supplier requirements
- completing overhaul of the final drive assembly and associated components within workplace timeframes
- presentation of vehicle/machine to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to the overhaul of final drive

<b>EVIDENCE GUIDE</b>	
	<p>assemblies</p> <ul style="list-style-type: none"> <li>• equipment, hand and power tooling appropriate to the overhaul of final drive assemblies</li> <li>• activities covering the mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different

**RANGE STATEMENT**

work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management

<b>RANGE STATEMENT</b>	
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include lubricants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the overhaul of final drive assemblies</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Driveline and Final Drives
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## AURTTR4001 Diagnose complex faults in engine management systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes required to diagnose complex faults in engine management systems in order to initiate action to service, repair, replace or improve performance.</p> <p>The unit involves evaluating system performance and identifying possible operational anomalies.</p> <p>Faults may be mechanical, electrical, electronic or fuel related by nature, requiring the application of complex diagnostic processes to resolve.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work applies to and includes system fault and failure diagnosis of engine management systems fitted to motorcycles, light vehicles, heavy commercial vehicles, and vehicles in the mining, construction, agricultural and marine environments.</p> <p>The unit relates to an automotive technologist, master technician or subject matter specialist. It encompasses and builds on trade level competencies.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	<p>1.1. Workplace instructions and reports are used to determine the nature and objective of system diagnosis requirements</p> <p>1.2. Specifications for correctly functioning <i>engine management systems</i> are accessed and interpreted</p> <p>1.3. <i>Workplace health and safety (WHS) requirements</i>, including equipment and system isolation and personal protection needs, are observed and addressed throughout the work</p> <p>1.4. Effects of systemic deficiencies or discrepancies or <i>faults</i> in engine management systems are identified and confirmed from indirect or direct evidence</p> <p>1.5. Possible safety impacts of the work are considered and responded to according to regulatory and workplace procedures</p>
2. Prepare to perform diagnosis	<p>2.1. Criteria for diagnosis are developed and adopted to meet the objective of the work</p> <p>2.2. System performance achievements or discrepancies are identified from scrutiny of technical support information and available on-board diagnostic systems</p> <p>2.3. Diagnostic methods, including complexity of diagnostic process, sequence, <i>tests</i> and testing process are identified and selected from the range of available options</p> <p>2.4. <i>Testing equipment</i> is obtained and prepared for application according to manufacturer, component supplier and workplace requirements</p> <p>2.5. Tools and materials required to support the diagnostic process are identified, selected and prepared for use</p>
3. Apply complex diagnostic process	<p>3.1. Selected <i>diagnostic processes</i> are followed according to specifications and workplace procedures</p> <p>3.2. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3. Findings are verified, if necessary, by using reliable alternate or optional processes</p> <p>3.4. Conclusions are drawn from findings and documented according to workplace requirements</p> <p>3.5. Information and detail related to the evaluation of diagnosis is provided to the appropriate person or customer to confirm further action to be taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs
- numeracy skills to use mathematical ideas and techniques to complete measurements, calculate requirements, and present results of diagnosis
- planning and organising skills to conclude complex diagnostic processes which anticipate and allow for risks, cater for both direct and indirect evidence and avoid or minimise reworking and avoid wastage
- problem-solving skills to use available information to contribute to decision making strategies for solving complex problems as they relate to engine management systems
- self-management skills to plan and organise activities, including the planning of analytical processes, preparation of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage
- technical skills to use workplace tools relating to the complex diagnosis of engine management systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to use workplace technology related to systems diagnosis, information research and management systems

#### Required knowledge

- concepts and principles of mechanical, fuel, electrical and electronic systems related to engine management systems
- concepts, types, functions, operations and limitations of engine management systems and components
- types, functions, operations and limitations of diagnostic testing equipment related to engine management systems
- testing procedures of engine management systems, including accessing and interpreting scan tool system data
- methods and processes for documenting and reporting diagnostic findings and recommendations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- interpret workplace instructions and locate and apply information
- apply safety requirements, including the use of personal protective equipment
- identify and select appropriate diagnosis processes to be performed
- complete diagnosis of complex faults on a minimum of three different engine management systems with real or simulated faults
- document and report outcomes and required actions of diagnosis of complex faults in engine management systems.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles systems with real or simulated engine management system faults

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- tools and equipment appropriate for the diagnosis of complex faults in engine management systems
- technical reference information and workplace instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Engine management systems</i></b> may include:	<ul style="list-style-type: none"> <li>• petrol throttle-body injection</li> <li>• petrol port-injection</li> <li>• petrol direct-injection</li> <li>• diesel common rail injection.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Faults</i></b> may include:	<ul style="list-style-type: none"> <li>• fuel system (fuel pump, fuel delivery, pressure regulation and injector faults)</li> <li>• ignition (no-start, no-run, misfire, erratic operation, lack of power)</li> <li>• intake (leakage, noise, vibration, inadequate control)</li> <li>• exhaust (leakage, pressure, abnormal emissions)</li> <li>• cooling (overcooling, insufficient cooler flow, coolant out of specification, improper cooling fan operation, internal corrosion)</li> <li>• indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations</li> <li>• direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications</li> <li>• component specifications, component assembly, component damage and system modifications</li> <li>• indirect engine mechanical faults.</li> </ul>
<b><i>Tests</i></b> may include:	<ul style="list-style-type: none"> <li>• component wear analysis, compression, cylinder leakage, engine performance, exhaust gas sampling, flow, oil consumption, pressure, sample collection/processing, specific</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>gravity, temperature and vacuum</li> <li>analysis of diagnostic trouble codes (DTCs) and system live data</li> <li>wiring and connector integrity, operation and specification of input and output devices, controlling electronic components and computers, data interpretation and readings related to direct, indirect and intermittent causes</li> <li>mechanical systems testing</li> <li>road test</li> <li>engine electrical component test.</li> </ul>
<b><i>Testing equipment</i></b> may include:	<ul style="list-style-type: none"> <li>computer-based diagnostic systems</li> <li>scan tools</li> <li>cooling system analysers</li> <li>dial gauges</li> <li>exhaust gas analysers</li> <li>micrometers</li> <li>multimeters</li> <li>oscilloscopes</li> <li>pressure gauges</li> <li>stethoscopes</li> <li>temperature gauges</li> <li>tachometers</li> <li>timing lights</li> <li>vacuum gauges</li> <li>verniers</li> <li>dynamometers</li> <li>manufacturer and component supplier testing equipment.</li> </ul>
<b><i>Diagnostic processes</i></b> may include:	<ul style="list-style-type: none"> <li>analysing manufacturer/component supplier specifications, schematics and operational procedures related to engine management systems</li> <li>component substitution</li> <li>six-step troubleshooting plan</li> <li>discover-investigate-fix methodology.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical – Electrical and Electronic

## Custom Content Section

Not applicable.

## AURTTS2001 Fabricate exhaust system and components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT205123A Fabricate exhaust system/components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to fabricate and test exhaust system/components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence applies to internal combustion engine/vehicle/equipment exhaust system/components.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, fabrication and testing of exhaust system/components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to carry out fabrication work on exhaust system/components</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for fabrication are sourced and support equipment is identified and prepared
2. <b>Fabricate exhaust system/components</b>	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Exhaust system/components are fabricated using approved methods and equipment, according to specifications and tolerances relative to manufacturer/component supplier specifications 2.3. Exhaust system/component fabrication is completed without causing damage to any component or system 2.4. Fabrication activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
3. <b>Test exhaust system/component</b>	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Exhaust system/components are tested using approved methods and equipment, according to specifications and tolerances relative to manufacturer/component supplier specifications 3.3. Exhaust system/component testing is completed without causing damage to any component or system 3.4. Testing activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
4. <b>Prepare equipment</b>	4.1. Work performed is documented

ELEMENT	PERFORMANCE CRITERIA
<b>for delivery to customer</b>	4.2.Final inspection is made to ensure work is to workplace expectations 4.3.Equipment is presented to customer to workplace expectations 4.4.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to fabrication and testing tooling and equipment, including the use of measuring equipment, welding and forming equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- legislation, including Australian Design Rules
- technical information
- fabrication principles and techniques
- exhaust system/component operating principles
- welding techniques
- enterprise quality procedures
- work organisation and planning



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• conducting the fabrication in accordance with workplace requirements</li> <li>• accurately interpreting test results</li> <li>• equipment is presented to customer in compliance with workplace requirements</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to fabricating exhaust system/ components</li> <li>• equipment, hand and power tooling appropriate to fabricating exhaust system/components</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p>

**EVIDENCE GUIDE**

	<p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Fabrication methods**

Fabrication methods include:

- making of system/components
- pipe bending
- welding of components
- manufacture of flanges
- testing of system

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and

<b>RANGE STATEMENT</b>	
	enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for forming, testing equipment, bending equipment, rollers, cutters, presses, measuring equipment, welding equipment and sealing equipment

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include exhaust components, filters, welding consumables and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the fabrication of exhaust system/components</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Fabrication
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## AURTTW2001 Carry out soft soldering techniques

### Modification History

Release	Comment
Release 1	Replaces AURV223808A Carry out soft soldering techniques Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to required carry out soft soldering processes, including the preparation of materials and equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to retail, service and repair streams.</p> <p>Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling and lifting equipment procedures and organisation insurance requirements.</p> <p>Work requires individuals to demonstrate some discretion, judgement and problem-solving skills in lifting, safety equipment, soft soldering techniques, environmental issues, repair procedures and vehicle operational requirements.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets, quality and quantity of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials for repairs and replacements are selected and inspected for quality.</p> <p>1.5. Correct hand, power tools and safety equipment are selected for safe use.</p> <p>1.6. Products are determined to minimise waste materials.</p> <p>1.7. Procedures are identified for maximising energy efficiency whilst completing the job.</p>
2. Prepare components, tools and equipment for soft soldering	<p>2.1. Preparing components, tools and equipment for soft soldering is completed without causing damage to any vehicle or component.</p> <p>2.2. Correct information is accessed and interpreted from appropriate manufacture specifications.</p> <p>2.3. Materials/components to be joined are cleaned and appropriate flux added.</p> <p>2.4. Soldering equipment is prepared/cleaned and appropriate flux added.</p> <p>2.5. All preparation activities are carried out according to a standard that meets industry regulations/guidelines, workplace health and safety (WHS) legislation, statutory legislation and enterprise procedures/policies.</p>
3. Carry out soft soldering of components/materials	<p>3.1. Soft soldering is completed without causing damage to any vehicle or component.</p> <p>3.2. Correct information is accessed and interpreted from appropriate manufacturer's specifications.</p> <p>3.3. Soldering joint is tested prior to placing into service.</p> <p>3.4. Soldering activities are carried out according to a standard that meets industry regulations/guidelines, WHS legislation, statutory legislation and enterprise policy/procedures.</p>
4. Clean up work area	<p>4.1. Material that can be reused is collected and stored.</p>

ELEMENT	PERFORMANCE CRITERIA
and maintain equipment	<p>4.2.Waste and scrap is removed following workplace procedures.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer specifications and site procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- reading and interpreting job specifications
- using tools and equipment safely
- accessing relevant workplace information
- maintaining a clean work environment

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements
- soldering procedures
- fluxes and their application
- types of material that can be soldered
- personal safety requirements
- equipment safety requirements
- planing of soft soldering processes and techniques
- workplace safety policies and procedures
- workplace guidelines regarding acceptable tolerance levels to be considered as per job sheet and manufacturer's specification
- procedures for reporting faults and material defects

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- interpret work order and locate and apply relevant information
- apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
- read and interpret communication procedural information from job sheets to prepare for work
- identify materials used in the work process
- follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality
- identify, set up, operate and maintain heating equipment, hand tools, lifting and measuring equipment.

#### Context of, and specific resources for assessment

- The underpinning knowledge and skills may be assessed on or off the job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.
- Access to vehicle and manufacturer specifications as identified in the Range Statement, standard operating procedures.

**EVIDENCE GUIDE****Method of assessment**

- Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts.
- Assessment should be by direct observation of tasks, questioning on underpinning knowledge and achievement of the soft soldering task outcomes.
- Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods include:

- application of soft solder to radiation applications/cooling system repairs and fuel tanks

**Work practices**

Work practices must abide by workplace health and safety requirements, and include:

- WHS legislation
- material safety management systems
- hazardous substances and dangerous goods code
- local safe operating procedures
- Australian Design Rules regulations

**Resources**

Resources may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• hand tools, various fluxes, different types of soft solder</li> <li>• power tools, gas</li> <li>• soldering equipment including electric and flame heated irons, gas fired torches</li> <li>• cleaning components, heating, tinning and/or soldering</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• workplace procedures relating to the use of tools and equipment</li> <li>• work instructions, including:               <ul style="list-style-type: none"> <li>• job sheets</li> <li>• vehicle manufacturer's specifications</li> <li>• enterprise operating procedures</li> <li>• component manufacture specifications</li> <li>• customer requirements</li> </ul> </li> <li>• workplace procedures relating to reporting and communication</li> <li>• manufacturer specifications and operational procedures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Welding, Grinding, Machining and Soldering
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## AURTTW3002 Set, operate and monitor specialist machines

### Modification History

Release	Comment
Release 1	<p>Replaces AURT334972A Set, operate and monitor specialist machines</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to set, operate and monitor specialist machines used in reconditioning engine and/or vehicle components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit does not cover crankshaft and camshaft grinding (see AURTTM3007 Carry out grinding operations).</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, setting the machine, operating and monitoring machine to produce required result and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to engine and/or vehicle component reconditioning.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for operations	1.1.Nature and scope of the work requirements are identified and confirmed 1.2.WHS requirements, including any individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals, specifications and tooling are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical and/or calibration requirements for machining are sourced and support equipment is identified and prepared
2. Set machine	2.1.Information is accessed and interpreted from manufacturer/component supplier specifications 2.2.Components are measured and repair action determined 2.3.Machine is set in accordance with defined procedures 2.4.Machines are set without causing damage to any component or system 2.5.Component is positioned and clamped 2.6.Machine is adjusted to meet operational requirements and specifications using appropriate measuring equipment 2.7.Tooling and accessories are selected 2.8.Worn or damaged tooling is identified and changed or sharpened 2.9.Setting activities are carried out according to industry regulations/guidelines, WHS legislation and enterprise procedures/policies
3. Operate and monitor machine	3.1.Information is accessed and interpreted from manufacturer/component supplier specifications 3.2.Machine is operated and monitored without causing damage to any component or system 3.3.Machine is operated in accordance with enterprise procedures 3.4.Components are checked with instruments to ensure compliance to specifications 3.5.Sharpness of tooling is monitored and tooling is

ELEMENT	PERFORMANCE CRITERIA
	<p>sharpened or replaced to meet requirements</p> <p>3.6.Finished product is checked for alignment, tolerance and finish</p> <p>3.7.Machining operations are carried out according to industry regulations/guidelines, WHS legislation and enterprise procedures/policies</p>
4. Prepare component for delivery to customer/storage	<p>4.1.Component is finalised and prepared for delivery in accordance with workplace requirements</p> <p>4.2.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills, e.g. when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including, making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply measurements, calculate material requirements and establish quality checks
- use workplace technology related to setting, operating and monitoring specialist machines, including the use of specialist tooling and equipment, measuring equipment, computerised technology, and of communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- the type, characteristics, uses and limitations of commonly used specialist machines
- techniques for reading and interpreting technical information, including technical drawings
- equipment safety requirements
- machining methods
- Industry codes of practice, including Australian Standards
- tool sharpening methods

**REQUIRED SKILLS AND KNOWLEDGE**

- cleaning/lubricating agents
- manual handling techniques
- measuring techniques
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques which are appropriate to the circumstances
- completing preparatory activity in a systematic manner
- machining of components without damage to tooling, equipment and injury to persons
- setting up, operating and monitoring machine operations for three tasks including, at a minimum:
  - one precision grinding operation, and
  - one milling or boring operation
- machining of components to specified tolerances and finishes following enterprise procedures
- completing machining of components within workplace timeframe
- presentation of components to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to setting, operating and monitoring specialist machines
- equipment, hand and power tooling appropriate to setting, operating and monitoring specialist machines

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Tooling and specialist machines</b>	Tooling and specialist machines may include measuring equipment, safety equipment, hand tooling, power/air tooling, lathes, milling machines, line borers, pin fitting machines, precision grinders, lifting and cleaning equipment
<b>Methods</b>	Methods are to include machine operation, measuring, machine/component set-up, tool sharpening and replacement
<b>WHS</b>	WHS requirements in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, company quality policy and standards and enterprise operations and procedures

<b>RANGE STATEMENT</b>	
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include measuring equipment, safety equipment, hand tooling, power/air tooling, lathes, milling machines, line borers, pin fitting machines, precision grinders, and lifting and cleaning equipment
<b>Material</b>	Material may include lubricant, machine parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the setting, monitoring and operating of specialist machines</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Welding, Grinding, Machining and Soldering
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## AURTTW3003 Carry out machining operations

### Modification History

Release	Comment
Release 1	Replaces AURT335108A Carry out machining operations Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out machining operations to a range of components to specific tolerances.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification the competence required to set up and machine components to specifications using a lathe, drilling and cutting machines.</p> <p>This unit of competence applies to reconditioning of automotive components to restore surface finishes, working clearances and component alignment. It applies to turning and/or grinding and/or cutting operations.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Set up machinery prior to machining	<ul style="list-style-type: none"><li>1.1.Machinery set-up is completed without causing damage to any components or systems.</li><li>1.2.Correct information is accessed and interpreted from appropriate manufacturer specifications</li><li>1.3.Material to be machined is positioned and clamped.</li><li>1.4.Correct speed and feed is selected to suit materials</li><li>1.5.Personal safety requirements including machine guards are worn and correctly positioned.</li><li>1.6.Setting up of components for machining/cutting is carried out in accordance with industry standards and manufacturer current specifications for methods, equipment used and tolerances relative to the component.</li><li>1.7.All machinery set-up activities are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies</li></ul>
2. Machine components	<ul style="list-style-type: none"><li>2.1.Components are machined without causing damage to any components or equipment.</li><li>2.2.Correct information is accessed and interpreted from appropriate manufacturer specifications</li><li>2.3.Component are measured for size and finish</li><li>2.4.Size and finish are compared with specification.</li><li>2.5.Area is cleaned prior to removal from machine</li><li>2.6.Machining/cutting of components is carried out in accordance with vehicle/system manufacturer current specifications for methods, equipment used and tolerances relative to the component being machine/cut.</li><li>2.7.All machining/cutting activities are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- Industry Codes of Practice
- Australian Standards
- types of measuring instruments, application and procedures
- machining procedures
- grinding procedures
- facing procedures
- cleaning/lubricating agents
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting measurements in accordance with workplace requirements
- machining work is done within workplace timeframes
- work presentation to customer or for storage in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to carrying out grinding and facing operations
- equipment, hand and power tooling appropriate to carrying out grinding and facing operations
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment

**EVIDENCE GUIDE**

guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods include lathe turning, grinding, cutting, drilling

Methods should be applied under normal operating conditions

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors

#### Emergency procedures

Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation

#### Environmental Requirements

Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management

<b>RANGE STATEMENT</b>	
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, lifting equipment, lathes, drills and power hacksaws or cut off saw, grinding equipment, measuring equipment and safety equipment
<b>Materials</b>	Materials may include ferrous and non ferrous materials including alloys, cooling, cleaning and lubricating materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to carrying out machining operations</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• vehicle manufacture specifications</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> </ul>

**RANGE STATEMENT**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• Australian Standards</li></ul> |
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Welding, Grinding, Machining and Soldering
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## AURTTX1001 Remove and tag transmission system components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT100264A Remove and tag transmission system components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence to remove and tag transmission components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work involved includes transmission systems of light vehicles, motorcycles, heavy vehicles road transport, heavy vehicles mobile plant, outdoor power equipment and marine craft.</p> <p>Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare to remove and tag transmission components</b>	<ul style="list-style-type: none"><li>1.1. Nature and scope of work requirements are identified and confirmed</li><li>1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced</li><li>1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.5. Dangers associated working with the removal and tagging of transmission components are observed</li></ul>
2. <b>Remove transmission system components</b>	<ul style="list-style-type: none"><li>2.1. Transmission components for removal are identified</li><li>2.2. Methods for the removal and tagging are implemented in accordance with manufacturer/component supplier specifications</li><li>2.3. Components are removed without damage</li><li>2.4. Inspection of components is carried out</li><li>2.5. Report is processed in accordance with workplace procedures</li></ul>
3. <b>Tag transmission components</b>	<ul style="list-style-type: none"><li>3.1. Tagging procedures are identified</li><li>3.2. Resource requirements for tagging are identified and support equipment is identified and prepared</li><li>3.3. Components are tagged without damage</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removing and tagging transmission components, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- transmission terminology
- function of each component
- relationship of components to each other
- application of components
- removal procedures
- tagging procedures
- quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, removing and tagging a range of components by their title and application
- conducting the removal and tagging without damage to components or tooling and equipment

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to removing and tagging transmission components
- equipment, hand and power tooling appropriate to removing and tagging transmission components
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Transmission systems</b>	Transmission systems may be manual and/or automatic and/or semi automatic and/or power shift transmissions, driveline components, rear axle/final drive assemblies and multiple speed and overdrive transmissions
<b>Components</b>	Components are to be tagged by title and application
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and

<b>RANGE STATEMENT</b>	
	enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment are may include hand tooling and hand held power tooling
<b>Materials</b>	Materials may include tags and cleaning materials

**RANGE STATEMENT****Communications**

Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers

**Information/documents**

Sources of information/documents may include:

- enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets and Australian Design Rules
- safe work procedures related to removing and tagging transmission components
- organisation work specifications and requirements

**Unit Sector(s)****Unit sector**

Mechanical Miscellaneous

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Transmission

## AURTTX2002 Inspect and service transmissions (manual)

### Modification History

Release	Comment
Release 1	<p>Replaces AURT206670A Inspect and service transmissions (manual)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to inspect and service manual transmissions in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• light vehicle, heavy vehicle, outdoor power equipment, mobile plant.</li></ul> <p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis and servicing of manual transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to undertake the inspection of manual transmissions</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures 1.5. Resources required for inspection of manual transmissions are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with manual transmissions are observed
<b>2. Conduct inspection and analyse results</b>	2.1. Inspection is implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is processed in accordance with workplace procedures
<b>3. Prepare to service manual transmissions</b>	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information required are identified and sourced 3.3. Resources required for servicing manual transmissions are identified and support equipment is identified and prepared
<b>4. Carry out service</b>	4.1. Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications 4.2. Adjustments made during the service are in accordance with manufacturer/component supplier specifications

ELEMENT	PERFORMANCE CRITERIA
<b>5. Prepare equipment for use or storage</b>	<p>5.1. Service schedule documentation is completed</p> <p>5.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3. Final inspection is made to ensure work is to workplace expectations</p> <p>5.4. Equipment is prepared for use or stored to workplace expectations</p> <p>5.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and servicing of manual transmissions, including the use of diagnostic and servicing tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with manual transmissions
- identification of application, purpose and operating principles
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service procedures
- enterprise quality procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- completing service of manual transmissions and associated components within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of manual transmissions
- equipment, hand and power tooling appropriate to the inspection and servicing of manual transmissions
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Inspection methods

Inspection methods include visual, aural and functional assessment (including: fluid leakage, selection)

#### Specific requirements

Specific requirements may include:

- manual transmissions, front and/or rear wheel drive configurations
- belt drive transmissions

#### Variables

Other variables may include:

- power take off assemblies,
- multiple forward and reverse gears,
- synchronised and non-synchronised gear selection,
- metal and non-metal gears
- electrical/pneumatic controls
- transverse/longitudinal mounting
- helical, double helical and spur gears
- transaxle, overdrive, transfer case and belt drive speed control

#### Servicing

Servicing to include fluids, filters, adjustments and operational testing, visual inspections and documents

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that

<b>RANGE STATEMENT</b>	
	prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, electrical safety, machinery movement, manual lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include lubricants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the inspection, analysis and servicing of manual transmissions</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURTTX2003 Inspect and service transmissions (automatic)

### Modification History

Release	Comment
Release 1	<p>Replaces AURT207170A Inspect and service transmissions (automatic)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the inspection and service of semi-automatic, automatic transmissions and associated components, including torque converters in an automotive retail, service and/or repair context.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involved includes semi-automatic, automatic transmissions in light and heavy vehicles, outdoor power equipment and marine craft.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis, servicing and testing of automatic transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to inspect semi-automatic, automatic transmission</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures 1.5. Resources required for the inspection of transmissions are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with transmissions are observed
<b>2. Conduct inspection and analyse results</b>	2.1. Inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications 2.2. Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is processed in accordance with workplace procedures
<b>3. Prepare to service transmission</b>	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information required are identified and sourced 3.3. Resources required for servicing transmissions are identified and support equipment is identified and prepared
<b>4. Carry out service to transmission</b>	4.1. Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications 4.2. Adjustments made during the service are in accordance with manufacturer/component supplier specifications

ELEMENT	PERFORMANCE CRITERIA
5. <b>Prepare equipment for use or storage</b>	<p>5.1. Service schedule documentation is completed</p> <p>5.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place</p> <p>5.3. Final inspection is made to ensure work is to workplace expectations</p> <p>5.4. Equipment is cleaned stored to workplace expectations</p> <p>5.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and servicing of automatic transmissions, including the use of diagnostic and servicing tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with transmissions
- fluid dynamics
- drive flow paths
- gear selection mechanisms
- three laws of compound planetary gear sets
- five laws of simple planetary gear sets

**REQUIRED SKILLS AND KNOWLEDGE**

- superior driving member rule

Identification of application, purpose and operating principles

Identification of component parts to include:

- physical fluids
- gases
- heat generated

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- identify application, purpose and operating principles
- conducting the inspection and servicing of a range of transmission types in accordance with workplace and manufacturer/component supplier requirements
- completing service of transmissions and associated components within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of automatic transmissions
- equipment, hand and power tooling appropriate to the inspection and servicing of automatic transmissions
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Transmissions

Transmissions may be automatic, semi-automatic and power shift transmissions, front and/or rear wheel drive configurations and include power take-off assemblies, pre-selective transmissions and electronically controlled transmissions

#### Methods

Methods are to include:

- operational testing
- visual, aural and functional assessment (including: fluid leakage, selection)

#### WHS

WHS requirements are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, electrical safety, machinery movement and operation, manual lifting and shifting, working in proximity to others and site visitors

#### Emergency procedures

Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid

<b>RANGE STATEMENT</b>	
	requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include lubricants, minor spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the inspection and servicing of automatic transmissions</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or</li> </ul>

**RANGE STATEMENT**

	external persons
	• Australian Standards

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURTTX2004 Service transmissions (hydrostatic)

### Modification History

Release	Comment
Release 1	Replaces AURT208170A Service transmissions (hydrostatic) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the service of hydrostatic transmissions and/or associated components for heavy vehicle, plant and outdoor power equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence applies to heavy vehicle transmissions (hydrostatic), outdoor power equipment and plant.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, servicing of hydrostatic transmissions and associated components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to service hydrostatic transmission</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for servicing are sourced and support equipment is identified and prepared
<b>2. Service hydrostatic transmission and/or associated components</b>	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Services to system components are carried out in accordance with manufacturer/component supplier specifications for methods and equipment 2.3. Transmission system service activities are carried out according to industry regulations/guidelines, WHS legislation and enterprise procedures/policies 2.4. Hydrostatic transmission is serviced without causing damage to any component or system 2.5. Workplace documentation is completed and dealt with relevant to service outcomes
<b>3. Prepare vehicle/equipment for customer use</b>	3.1. Service schedule documentation is completed 3.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place 3.3. Final inspection is made to ensure work is to workplace expectations 3.4. Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to servicing hydrostatic transmissions, including the use of servicing tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- operating principles of hydrostatic transmissions and their applications
- types and layout of service/repair manuals (hard copy and electronic)
- servicing procedures
- hydraulic fluids and their application
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the service of a range of transmissions in accordance with workplace and manufacturer/component supplier requirements
- completing servicing of transmission and associated components within workplace timeframes
- vehicle/equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to servicing hydrostatic transmissions
- equipment, hand and power tooling appropriate to servicing hydrostatic transmissions
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning

**EVIDENCE GUIDE**

knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Systems and components</b>	<p>Systems and components may include:</p> <ul style="list-style-type: none"> <li>• variable displacement and fixed displacement hydraulic pumps</li> <li>• variable displacement and fixed displacement hydraulic motors</li> <li>• radial piston, axial piston, vane, rotor and gear type pumps and motors</li> <li>• closed and replenishing systems</li> <li>• charge pumps</li> <li>• positive and non-positive displacement hydraulic pumps</li> </ul>
<b>Methods</b>	Methods are to include visual, aural and functional assessment, including fluid leakage
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors

<b>RANGE STATEMENT</b>	
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, hydraulic pressure gauges, hydraulic flow meters and dispensing equipment
<b>Materials</b>	Materials may include hydraulic fluids, lubricants, minor spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to servicing hydrostatic transmissions</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURTTX2005 Inspect and service clutch systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to inspect and service clutch systems.</p> <p>The unit involves an inspection of the clutch system to note deviations from correct operation as well as service to ensure the system complies with manufacturer's specifications.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the clutch systems of motorcycles, light vehicles, heavy commercial vehicles, agricultural equipment, mobile plant and other industrial environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to inspect and service a clutch system	<p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b> relating to inspecting and servicing <b>clutch systems</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Appropriate tools and equipment are selected and prepared</p>
2. Inspect a clutch system	<p>2.1. Inspection is carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Inspection results are compared with manufacturer and component supplier specifications</p> <p>2.3. Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
3. Service a clutch system	<p>3.1. <b>Service options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tools, techniques and materials are selected and prepared</p> <p>3.3. Service and adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p>
4. Clean up work area and finalise work processes	<p>4.1. <b>Final inspection</b> is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. <b>Service schedule documentation</b> is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
  - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - follow workplace documentation, such as codes of practice or operating procedures
  - document work performed during inspection and servicing operations
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the inspection and servicing of clutch systems
  - technology skills to use technology to collect and provide information.

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- operating principles of clutch systems
- methods of sourcing information relevant to inspecting and servicing clutch inspection procedures for clutch systems
- inspection procedures for clutch systems
- service procedures for clutch systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- inspect and service a range of clutch systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles relevant to the qualification being sought
- tools and equipment appropriate for the inspection and servicing of clutch systems
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace instructions</i></b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• clutch system inspection and servicing methods, processes and equipment.</li> </ul>
<b><i>Clutch systems</i></b> may include:	<ul style="list-style-type: none"> <li>• dry single or multi-plate clutch</li> <li>• wet multi-plate clutch</li> <li>• cable operated clutch</li> <li>• hydraulically-operated clutch</li> <li>• mechanically operated clutch.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Procedures and information</i></b> may include:	<ul style="list-style-type: none"> <li>• safe work procedures relating to the inspection and servicing of clutch systems</li> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li><li>• vehicle service requirements and repair manuals.</li></ul>
<i>Service options</i> may include:	<ul style="list-style-type: none"><li>• clutch fluid replacement</li><li>• adjustments and operational testing.</li></ul>
<i>Final inspection</i> may include:	<ul style="list-style-type: none"><li>• final check of vehicle fluid levels</li><li>• checking of clutch system operation during mobile or stationary tests</li><li>• cleaning of vehicle.</li></ul>
<i>Service schedule documentation</i> may include:	<ul style="list-style-type: none"><li>• vehicle service book</li><li>• job card or work order</li><li>• workplace computerised or written customer records and invoice.</li></ul>

## Unit Sector(s)

Competency field	Mechanical Miscellaneous
Unit sector	Technical - Transmission

## Custom Content Section

Not applicable.

## AURTTX3006 Repair transmissions (hydrostatic)

### Modification History

Release	Comment
Release 1	Replaces AURT308166A Repair transmissions (hydrostatic) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the repair, removal and replacement of hydrostatic transmissions for heavy vehicle, plant or outdoor power equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of systems, removal, repair and replacement of hydrostatic transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to carry out repairs to hydrostatic transmission	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical and/or calibration requirements for repair are sourced and support equipment is identified and prepared
2. Test hydrostatic transmission and analyse results	2.1.Methods for system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is processed in accordance with workplace procedures
3. Remove, repair and replace hydrostatic transmission	3.1.Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2.Repairs and adjustments to transmission components are carried out in accordance with manufacturer/component supplier specifications for methods and equipment 3.3.Hydrostatic transmission is repaired without causing damage to any component or system 3.4.Workplace documentation is completed and dealt with relevant to repair, remove and replace outcomes 3.5.Transmission system repair and removal/replacement activities are carried out according to industry regulations/ guidelines, WHS legislation, legislation and enterprise procedures/policies
4. Prepare vehicle/ equipment for customer use	4.1.Repair schedule documentation is completed 4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place

ELEMENT	PERFORMANCE CRITERIA
	<p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Vehicle/equipment is cleaned for use or storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organisational skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to repair, removal and replacement of hydrostatic transmissions and/or associated components, including the use of measuring equipment, electronics, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- identification of application, purpose and operation
- identification of component parts to include, physical, fluid, gases and heat generated
- types and layout of service/repair manuals (hard copy and electronic)
- repair procedures
- component evaluation
- system testing procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- manual handling techniques
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- applying full repair sequence, as per the Range Statement, to a faulty transmission relative to the qualification being sought
- completing repair of transmission and associated components within workplace timeframes
- vehicle/equipment presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of hydrostatic transmissions
- equipment, hand and power tooling appropriate to repair of hydrostatic transmissions
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Hydrostatic transmissions</b>	Hydrostatic transmissions are those with variable and fixed displacement motors and pumps and closed or replenishing systems
<b>Variables</b>	Variables may include radial piston, axial pistons, vane, rotor and gear type pumps and motors
<b>Repair methods and sequence</b>	Repair methods and sequence are to include isolation of fault(s), dismantling of components/parts, inspection and evaluation, repair and replacement of parts, assembly and completion of operational tests and records
<b>Faults</b>	Faults may include excessive internal leaking, abnormal noises and worn components
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors

<b>RANGE STATEMENT</b>	
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, hydraulic pressure gauges, hydraulic test bench, hydraulic flow meters, precision measuring equipment, hydraulic lubricants and dispensing equipment
<b>Materials</b>	Materials may include hydraulic fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repairing hydrostatic transmissions and/or associated components</li> <li>• regulatory/legislative requirements pertaining</li> </ul>

**RANGE STATEMENT**

	<p>to automotive industry, including Australian Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURTTX4007 Overhaul clutch assemblies

### Modification History

Release	Comment
Release 1	Replaces AURT406145A Overhaul clutch assemblies Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the overhaul of dry or wet clutch assemblies and/or associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of the work requirement, preparation for work, testing of clutch assemblies, analysing test results, overhauling of clutch assemblies and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes all vehicles/machines.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake the overhaul of clutch assemblies	1.1.Nature and scope of the work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical and/or adjustment requirements for the testing and overhaul of clutch assemblies are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with clutch assemblies are observed
2. Test clutch assemblies and analyse results	2.1.Methods for the conduct of the tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is forwarded to appropriate persons for action in accordance with workplace procedures
3. Carry out the overhaul of clutch assemblies	3.1.Methods for the conduct of the overhaul are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2.All adjustments made during the overhaul are in accordance with manufacturer/component supplier specifications
4. Prepare vehicle/ equipment for use or storage	4.1.Overhaul schedule documentation is completed 4.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3.Final inspection is made to ensure work is to workplace expectations 4.4.Vehicle/equipment is cleaned for use or stored to workplace expectations 4.5.Job card is processed in accordance with workplace

ELEMENT	PERFORMANCE CRITERIA
	procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the testing and overhauling of dry and wet clutch assemblies and associated components, including the use of measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled and tracked equipment
- identification of the application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- identification of wear evaluation methods
- clutch assembly test procedures
- clutch assembly overhaul procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of the application, purpose and operation
- application of the full overhaul sequence as per the Range Statement relative to the qualification being sought
- conducting the overhaul in accordance with workplace and manufacturer/component supplier requirements
- interpreting the test results
- completing overhaul of the clutch and associated components within workplace timeframes
- presentation of the vehicle/machine to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to testing and overhauling dry and

<b>EVIDENCE GUIDE</b>	
	<p>wet clutch assemblies and associated components</p> <ul style="list-style-type: none"> <li>• equipment, hand and power tooling appropriate to testing and overhauling dry and wet clutch assemblies and associated components</li> <li>• activities covering the mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Variables</b>	Variables can include, single, dual and multiple plate clutches, pressure plates, over centre and two stage clutches
<b>Overhaul methods and sequences</b>	Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include lubricants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related the overhaul of dry and wet clutch assemblies and/or associated components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> </ul>

**RANGE STATEMENT**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• Australian Standards</li></ul> |
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURTTX4008 Overhaul transmissions (manual)

### Modification History

Release	Comment
Release 1	Replaces AURT406645A Overhaul transmissions (manual) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to completely dismantle and rebuild manual transmissions.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of the work requirement, preparation for work, the testing and analysis of transmissions, the dismantling, assembling, inspection, adjusting, preparation of the manual transmissions for installation and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to the following and should be contextualised to the qualification it is being applied:</p> <ul style="list-style-type: none"><li>• manual transmissions fitted to light vehicles, heavy vehicles, mobile plant and outdoor power equipment.</li></ul> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul manual transmission	<p>1.1.Nature and scope of the work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced</p> <p>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5.Technical and/or calibration requirements for testing and overhaul are sourced and support equipment is identified and prepared</p>
2. Test manual transmission and analyse results	<p>2.1.Methods for the conduct of the system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>2.3.Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4.Report is processed in accordance with workplace procedures</p>
3. Overhaul manual transmission	<p>3.1.Information is accessed and interpreted from manufacturer/component supplier specifications</p> <p>3.2.Manual transmissions are overhauled using approved methods and equipment, according to manufacturer/component supplier specifications and tolerances relative to the vehicle/plant manufacturer/component supplier</p> <p>3.3.Manual transmission is overhauled without causing damage to any component or system</p> <p>3.4.Overhauling activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies</p>
4. Prepare transmission for installation	<p>4.1.Overhaul schedule documentation is completed</p> <p>4.2.Inspection is made to ensure gears are able to be accessed</p> <p>4.3.Final inspection is made to ensure work is to</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>workplace expectations</p> <p>4.4. Transmission is presented for installation/storage to workplace expectations</p> <p>4.5. Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to overhauling manual transmissions, including the use of measuring equipment, electronics, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- identification of the application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- identification of wear evaluation methods
- types and layout of service/repair manuals (hard copy and electronic)
- manual transmission overhaul procedures
- component repair and adjustment procedures
- manual handling procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of the application, purpose and operation
- application of the full overhaul sequence as per the Range Statement relative to the qualification being sought
- transmission must be of multiple speed constant mesh or synchromesh design
- interpreting test results
- conducting the overhaul in accordance with workplace and manufacturer/component supplier requirements
- completing overhaul of transmission and associated components within workplace timeframes

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to overhauling manual

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	<p>transmissions</p> <ul style="list-style-type: none"> <li>• equipment, hand and power tooling appropriate to overhauling manual transmissions</li> <li>• activities covering the mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or</p>

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	<p>other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>• visual, aural and functional assessments (including: fluid leaks, wear, damage, corrosion)</li> <li>• dismantling and assembling, inspection, adjusting</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements:</p> <ul style="list-style-type: none"> <li>• conventional, transaxle and overdrive type manual transmissions</li> <li>• transfer cases</li> <li>• spur, helical, herringbone and planetary gears</li> </ul>
<b>Overhaul methods and sequences</b>	<p>Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records</p>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to the conduct of operational risk</p>

<b>RANGE STATEMENT</b>	
	assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, precision measuring equipment, lifting and supporting equipment, and cleaning equipment
<b>Materials</b>	Materials may include spare parts, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• sheets, diagrams or sketches</li><li>• safe work procedures related to overhauling a manual transmission</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURTTX4009 Overhaul transmissions (automatic)

### Modification History

Release	Comment
Release 1	Replaces AURT407145A Overhaul transmissions (automatic) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to completely dismantle and rebuild an automatic transmission involving identification and replacement or repair of worn and deteriorated parts, testing and adjustment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of the work requirement, preparation for work, the dismantling of automatic transmissions, evaluation of the parts, overhaul, testing of the transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>For repairs to electronic control drive management systems refer to AURETR3044 Service and repair electronic drive management systems.</p> <p>This unit of competence applies to the following:</p> <ul style="list-style-type: none"><li>• automatic, semi-automatic and power shift transmissions fitted to light, heavy vehicles, mobile plant and outdoor power equipment.</li></ul> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul automatic transmission	<p>1.1.Nature and scope of the work requirements are identified and confirmed</p> <p>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</p> <p>1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced</p> <p>1.4.Transmission faults are identified</p> <p>1.5.Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6.Technical and/or calibration requirements for overhaul are sourced and support equipment is identified and prepared</p>
2. Dismantle automatic transmission and evaluate parts	<p>2.1.Information is accessed and interpreted from manufacturer/component supplier specifications</p> <p>2.2Automatic transmission is dismantled using approved methods and equipment, according to manufacturer/component supplier procedures</p> <p>2.3Automatic transmission is dismantled without causing damage to any component or system</p> <p>2.4.Transmission parts are cleaned in readiness for evaluation</p> <p>2.5.Parts are checked for serviceability against manufacturer/component supplier specifications</p> <p>2.6.Unserviceable parts are identified and a replacement parts list raised</p>
3. Overhaul automatic transmission	<p>3.1.Information is accessed and interpreted from manufacturer/component supplier specifications</p> <p>3.2Automatic transmission is overhauled using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle/plant manufacturer/component supplier</p> <p>3.3Automatic transmission is overhauled without causing damage to any component or system</p> <p>3.4.Overhauling activities are carried out according to industry regulations/guidelines, WHS legislation and enterprise procedures/policies</p>
4. Conduct	4.1.Methods for the conduct of the test is implemented

ELEMENT	PERFORMANCE CRITERIA
transmission testing	<p>in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>4.2.Observations are noted during the test</p> <p>4.3.Documentation of observations are completed</p> <p>4.4.Results of test are analysed</p> <p>4.5.Report is processed in accordance with workplace procedures</p>
5. Prepare transmission for installation	<p>5.1.Overhaul schedule documentation is completed</p> <p>5.2.Transmission is cleaned to enterprise requirements</p> <p>5.3.Final inspection is made to ensure work is to workplace expectations</p> <p>5.4.Transmission is presented for installation/storage to workplace expectations</p> <p>5.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to overhauling of automatic transmissions, including the use of measuring equipment, computerised technology and communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- identification of the application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- identification of wear evaluation methods
- operating principles of constant mesh and/or planetary automatic transmissions
- laws of single and compound planetary gearing
- types and layout of service/repair manuals (hard copy and electronic)
- automatic transmission overhaul procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- automatic transmission test procedures
- automatic transmission dismantling and assembling procedures
- automatic transmission component adjustment procedures
- enterprise quality procedures
- work organisation and planning processes
- manual handling procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of the application, purpose and operation
- application of the full overhaul sequence as per the Range Statement relative to the qualification being sought
- presenting the test results
- conducting the overhaul in accordance with workplace manufacturer/component supplier requirements
- completing overhaul of transmission and associated components within workplace timeframes
- presentation of transmission to customer/stored in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to overhauling automatic

**EVIDENCE GUIDE**

	<p>transmissions</p> <ul style="list-style-type: none"> <li>• equipment, hand and power tooling appropriate to overhauling automatic transmissions</li> <li>• activities covering the mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or</p>

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	<p>other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- pressure testing, electrical testing (including leakage, short circuits, open circuits)
- visual, aural and functional assessments (including fluid leaks, wear, damage, corrosion)
- dismantling and assembling, testing, adjusting

#### Specific requirements

Specific requirements may include:

- planetary or countershaft (constant mesh) transmission
- conventional, transaxle, 4WD and overdrive type automatic transmissions
- electronically controlled transmissions
- torque converter, continuously variable, lock-up

#### Overhaul methods and sequences

Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulations/codes of

<b>RANGE STATEMENT</b>	
	practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, specialist tooling for disassembly, assembly and adjustment, measuring equipment, lifting equipment, cleaning equipment, testing equipment, including load device and pressure testers, tachometers, multimeters and power tooling
<b>Materials</b>	Materials may include lubricants, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and

**RANGE STATEMENT**

	paggers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to overhauling automatic transmissions</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Transmission
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## AURTTX4010 Overhaul transmissions (hydrostatic)

### Modification History

Release	Comment
Release 1	Replaces AURT408145A Overhaul transmissions (hydrostatic) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to completely dismantle and rebuild a hydrostatic transmission.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of the work requirement, preparation for work, testing and analysis of hydrostatic transmissions, dismantling, assembling, inspection, adjusting and preparation of the hydrostatic transmissions and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competence applies to hydrostatic transmissions fitted to heavy vehicle, plant and outdoor power equipment.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul hydrostatic transmission	1.1.Nature and scope of the work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals, specifications and tooling, are sourced 1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5.Technical and/or calibration requirements for testing and overhaul are sourced and support equipment is identified and prepared
2. Test hydrostatic transmission and analyse results	2.1.Methods for the conduct of the system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3.Results are documented with evidence and supporting information and recommendation(s) made 2.4.Report is processed in accordance with workplace procedures
3. Overhaul hydrostatic transmission	3.1.Information is accessed and interpreted from manufacturer/component supplier specifications 3.2.Hydrostatic transmissions are overhauled using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle/plant manufacturer/component supplier 3.3.Hydrostatic transmission is overhauled without causing damage to any component or system 3.4.Appropriate workplace documentation is completed and dealt with to overhaul outcomes 3.5.Overhauling activities are carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies
4. Prepare transmission	4.1.Overhaul documentation is completed

ELEMENT	PERFORMANCE CRITERIA
for installation/storage	<p>4.2.Final inspection is made to ensure protective guards and safety features are in place</p> <p>4.3.Final inspection is made to ensure work is to workplace expectations</p> <p>4.4.Transmission is prepared for installation/storage to workplace expectations</p> <p>4.5.Job card is processed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to overhauling hydrostatic transmissions, including the use of electronics, computerised technology and communication devices and reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- identification of the application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- identification of wear evaluation methods
- types and layout of service/repair manuals (hard copy and electronic)
- hydrostatic transmission overhaul procedures
- hydrostatic transmission system test procedures
- manual handling techniques

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of the application, purpose and operation
- application of the full overhaul sequence as per the Range Statement relative to the qualification being sought
- interpreting the test results
- conducting the overhaul in accordance with workplace and manufacturer/component supplier requirements
- completing overhaul of the transmission and associated components within workplace timeframes
- presentation of transmission to customer/storage in compliance with work requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to overhauling hydrostatic

**EVIDENCE GUIDE**

	<p>transmissions</p> <ul style="list-style-type: none"> <li>• equipment, hand and power tooling appropriate to overhauling hydrostatic transmissions</li> <li>• activities covering the mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions (real or simulated) and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>• visual, aural and functional assessment (including excessive wear, corrosion, selection and damage)</li> <li>• system testing under operating conditions</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements:</p> <ul style="list-style-type: none"> <li>• variable displacement and fixed displacement hydraulic pumps</li> <li>• variable displacement and fixed displacement hydraulic motors</li> </ul>
<b>Variables</b>	<p>Other variables may include:</p> <ul style="list-style-type: none"> <li>• radial piston, axial piston, vane, rotor and gear type pumps and motors</li> <li>• closed and replenishing systems</li> </ul>
<b>Overhaul methods and sequences</b>	<p>Overhaul methods and sequences are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, performance of functional testing and the completion of records</p>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulations/codes of</p>

<b>RANGE STATEMENT</b>	
	practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, hydraulic pressure gauges, hydraulic test bench, hydraulic flow meters and precision measuring equipment
<b>Materials</b>	Materials may include hydraulic fluids, spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers

**RANGE STATEMENT****Information/documents**

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to overhauling of hydrostatic transmissions
- regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards

**Unit Sector(s)****Unit sector**

Mechanical Miscellaneous

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Transmission

## AURTTX4011 Overhaul torque converters

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to overhaul automatic transmission torque converters. It involves diagnosing deviations from correct operation, undertaking overhaul operations on torque converter components and associated systems, and post-overhaul testing procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work applies to the automatic transmission torque converters in motorcycle, light vehicle, road transport, mining, construction, agricultural, marine and other industrial environments.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to overhaul torque converter	<p>1.1. <b>Workplace instructions</b> are used to determine job requirements</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. <b>Method options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. <b>Support equipment</b> is identified and prepared</p>
2. Dismantle torque converter and evaluate parts	<p>2.1. Information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>2.2. <b>Torque converter is dismantled</b> using approved methods and equipment, according to manufacturer and component supplier procedures and without causing damage to components or system</p> <p>2.3. Torque converter parts are cleaned in readiness for evaluation</p> <p>2.4. Parts are checked for serviceability against manufacturer and component supplier specifications</p> <p>2.5. Unserviceable parts are identified and a replacement parts list is raised</p>
3. Carry out overhaul procedures	<p>3.1. Torque converter components are <b>machined, repaired or replaced</b> to manufacturer or component supplier specifications and tolerances using approved methods and equipment</p> <p>3.2. Torque converter is re-assembled to manufacturer or component supplier specifications and tolerances</p>
4. Conduct post-overhaul testing	<p>4.1. <b>Torque converter is tested</b> according to workplace procedures and manufacturer and component supplier specifications</p> <p>4.2. Observations are noted and documented during the test</p> <p>4.3. Results of test are analysed and serviceability of the torque converter is determined</p> <p>4.4. Documentation of the analysis is completed</p>
5. Prepare torque converter for use or storage	<p>5.1. Torque converter is cleaned to workplace requirements</p> <p>5.2. Final inspection is made to ensure work is to workplace expectations and torque converter is presented ready for use or storage</p> <p>5.3. Tools and equipment are checked and stored</p> <p>5.4. Job card is processed according to workplace procedures</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow oral instructions
  - communicate with customers to handle enquiries and interpret their needs
- initiative and enterprise skills to adapt to new and emerging technology relating to torque converters
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document required repairs and parts
  - complete job cards to workplace expectations
- numeracy skills to assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the overhaul of torque converters, including the use of:
  - specialist tooling and equipment
  - measuring equipment
- technology skills to:
  - operate diagnostic and test equipment
  - use technology to collect, analyse and provide information

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

**Required knowledge**

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to overhauling torque converters
- application, purpose and operation of torque converters
- methods for evaluating torque converter wear and damage
- torque converter overhaul procedures
- torque converter test procedures
- torque converter dismantling procedures
- torque converter assembling procedures
- post-overhaul testing procedures for torque converters

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- overhaul a range of torque converters
- conduct overhaul procedures according to workplace, manufacturer and component supplier requirements
- present torque converter in a condition that complies with workplace expectations.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- torque converters to be overhauled relevant to the qualification being sought
- equipment appropriate for the testing of torque converters
- specifications and workplace instructions

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- tools appropriate for the overhaul of torque converters.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Workplace instructions</b> may include:	<ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>
<b>Job requirements</b> may include:	<ul style="list-style-type: none"> <li>• customer needs</li> <li>• overhaul methods, processes and equipment.</li> </ul>
<b>Workplace health and safety requirements:</b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Procedures and information</b> may include:	<ul style="list-style-type: none"> <li>• verbal or written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the overhaul of torque converters</li> <li>• regulatory and legislative requirements relating to automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• vehicle service requirements and repair manuals.</li> </ul>
<b>Method options</b> may include:	<ul style="list-style-type: none"> <li>• component repair and adjustment</li> <li>• component replacement.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Support equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• cleaning machines</li> <li>• computer numerical controlled (CNC) or manual cut lathe</li> <li>• welding rigs.</li> </ul>
<b><i>Dismantling the torque converter</i></b> may include:	<ul style="list-style-type: none"> <li>• cutting open the torque converter</li> <li>• cleaning</li> <li>• hub, piston, turbine and stator removal.</li> </ul>
<b><i>Machining, repairing or replacing torque converter components</i></b> may include:	<ul style="list-style-type: none"> <li>• hub bearing surface area machining</li> <li>• front cover machining for bonding</li> <li>• piston preparation and machining for bonding</li> <li>• machining edge for relief for "O" stack height</li> <li>• stator dismantling and assembly</li> <li>• piston bonding</li> <li>• piston and turbine preparation and assembly</li> <li>• height check</li> <li>• hub welding</li> <li>• balancing procedures.</li> </ul>
<b><i>Testing the torque converter</i></b> may include:	<ul style="list-style-type: none"> <li>• hub leak checking</li> <li>• end play clearance checking</li> <li>• pressure testing.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Mechanical Miscellaneous
<b>Unit sector</b>	Technical – Transmission

**Custom Content Section**

Not applicable.

## AURTTY3001 Repair chassis, frame and associated components

### Modification History

Release	Comment
Release 1	<p>Replaces AURV328366A Repair chassis/frame and associated components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to inspect/replace, repair and align chassis/frame and/or components applicable to vehicles with separate frame construction.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, the inspection, repair, replacement and alignment of chassis/frame and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Inspect to determine repairs	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Written inspection report is prepared during inspection.</p> <p>2.3. Inspection is completed without causing damage to any component or system.</p> <p>2.4. Inspection activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.5. Results of inspection are documented/processed in accordance with enterprise requirements.</p>
3. Replace or repair chassis/frame and associated components	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Repair and replacement of chassis/frame and associated components are carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances relative to the vehicle.</p> <p>3.3. Replacement and repairs to components are achieved without causing damage to any component or system.</p> <p>3.4. Workplace documentation is completed and dealt with relevant to replacement or repair outcomes.</p> <p>3.5. All repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Align chassis/frame components	<p>4.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>4.2.Alignment of chassis/frame and associated components is carried out in accordance with vehicle manufacturer/ component supplier specifications and tolerances relative to the vehicle.</p> <p>4.3.Alignment is achieved without causing damage to any component or system.</p> <p>4.4.Workplace documentation is completed and dealt with relevant to chassis alignment outcomes.</p> <p>4.5.All repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
5. Clear up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap is removed following workplace and environmental procedure.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for repair of chassis/frame and associated components
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair of chassis/frame and associated components, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- manufacturer/component supplier/company policies
- technical information
- inspection and measuring procedures
- repair/replacement procedures
- alignment procedures
- welding techniques
- manual handling techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- inspecting, replacing/repairing and aligning of a range of chassis/frame components to workplace and manufacturer/component supplier requirements
- completing workplace/equipment documentation.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair of chassis/frame and associated components
- equipment, hand and power tooling appropriate to repair of chassis/frame and associated components
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Chassis/frame and associated components</b>	Chassis/frame and associated components include chassis, body, wheels, body panels, accessories and body frames.
<b>Repair methods</b>	Repair methods are to include: <ul style="list-style-type: none"> <li>• visual, aural and functional assessments (including damage, wear and breakage)</li> <li>• application of the principles, angles and geometry of vehicle wheel and chassis alignment</li> <li>• measuring</li> <li>• welding and framing.</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency

<b>RANGE STATEMENT</b>	
	shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, measuring equipment, pressing equipment, heating equipment, welding equipment which may include arc, oxy acetylene, MIG, TIG, chassis aligning equipment, specialist tooling for removal/alignment, lifting equipment and wheel alignment equipment.
<b>Materials</b>	Materials may include welding consumables, spare parts and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair of chassis/frame and associated components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian</li> </ul>

**RANGE STATEMENT**

	<p>Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Chassis and Frame
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## AURTTZ2001 Inspect and service emission control systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURT204670A Inspect and service emission control systems</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to service emission control systems.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and servicing of emission control systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit of competency applies to the following and should be contextualised to the qualification to which it is being applied:</p> <ul style="list-style-type: none"><li>• light vehicle and/or heavy vehicles and/or plant and equipment and/or marine equipment and/or motorcycles</li><li>• emission control systems associated with engine management systems are dealt with in another unit of competency.</li></ul> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Job card is processed in accordance with workplace procedures.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to undertake a service on an emission control system</b>	1.1.The nature and scope of the work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as appropriate to tasks 1.5.Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.6.Technical and/or calibration requirements for service are sourced and support equipment is identified and prepared
<b>2. Service emission control systems</b>	2.1.Testing equipment is selected 2.2.Tests are performed and results analysed in accordance with manufacturer/component supplier specifications 2.3.Emission control system servicing is carried out according to industry regulations/guidelines, WHS legislation, legislation and enterprise procedures/policies 2.4.Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.5.Emission control systems service is completed without causing damage to any component or system
<b>3. Prepare vehicle/equipment for delivery to customer</b>	3.1.Service schedule documentation is completed 3.2.Final inspection is made to ensure safety features are in place 3.3.Final inspection is made to ensure work is to workplace expectations 3.4.Vehicle/equipment is presented to workplace expectations 3.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to inspection and servicing of emission control systems, including the use of diagnostic and servicing tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- National Environment Protection Measures for Diesel Vehicles as applicable to tasks
- identification of motor vehicle emissions and their effects on the environment
- identification of application, purpose and operating principles
- principles of emission control and the reduction of HC, NO<sub>x</sub>, CO, CO<sub>2</sub>, particulates and smog

**REQUIRED SKILLS AND KNOWLEDGE**

- types and of emission systems and components
- legislation
- techniques for the interpretation of technical information, graphic symbols and diagrams
- types and layout of service/repair manuals (hard copy and electronic)
- testing procedures
- servicing procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting test results
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- completing work within the agreed timeframe
- vehicle/equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to inspection and servicing of emission control systems
- equipment, hand and power tooling appropriate to inspection and servicing of emission control systems
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines

**EVIDENCE GUIDE**

of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Inspection methods</b>	<p>Inspection methods include:</p> <ul style="list-style-type: none"> <li>• road testing and dynamometer testing, exhaust gas testing</li> <li>• visual, aural and functional assessments (including: damage, corrosion, air leaks, wear, testing of electrical circuits)</li> <li>• measurements</li> <li>• electronic system tests</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements: may include sensing and control systems, including carbon canisters, mechanical devices, catalytic converters, electronic sensors, EGR values</p>
<b>Servicing</b>	<p>Servicing to include fluids, filters, adjustments and operational testing, visual inspections and documents</p>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation,</p>

<b>RANGE STATEMENT</b>	
	manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, pollution protection and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory Authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, testing equipment, including exhaust gas analysers and hand held meters, power tooling, specialist tooling for testing, removal or adjustment, and dynamometers
<b>Materials</b>	Materials may include spare parts, lubricants, fluids, filters and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to inspecting and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>servicing emission control systems</li><li>regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels) and National Environment Protection for Diesel Vehicle Guidelines</li><li>engineer's design specifications and instructions</li><li>organisation work specifications and requirements</li><li>instructions issued by authorised enterprise or external persons</li><li>Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Emission and Exhaust
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## AURTTZ2002 Repair exhaust system components

### Modification History

Release	Comment
Release 1	Replaces AURT205166A Repair exhaust system components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to repair and replace exhaust system/components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competence applies to light vehicles and/or heavy vehicles and/or motorcycles and/or plant and equipment.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, removal, repair and replacement of faulty exhaust/components and work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to undertake repairs to exhaust system/components</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. National Environment Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work (applicable to heavy vehicle diesel engine exhaust systems) 1.5. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.6. Technical requirements for repairs are sourced and support equipment is identified and prepared
<b>2. Remove, repair and replace faulty exhaust system/components</b>	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Repairs and/or replacements to faulty exhaust system/components are carried out in accordance with manufacturer/component supplier specifications 2.3. Faulty exhaust system/component repair is completed without causing damage to any component or system 2.4. Removal/replacement operations are completed within established industry guidelines 2.5. Exhaust system/component removal/replacement activities are carried out according to industry regulations/ guidelines, WHS legislation, legislation and enterprise procedures/policies
<b>3. Prepare vehicle/ equipment for use or storage</b>	3.1. Repair schedule documentation is completed 3.2. Final inspection is made to ensure protective guards and safety features are in place 3.3. Final inspection is made to ensure work is to workplace expectations 3.4. Job card is processed in accordance with workplace procedures



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal, repair and replacement of faulty exhaust system/components, including the use of diagnostic and specialised tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- National Environment Protection Measure for Diesel Vehicles as applicable to tasks
- identification of application, purpose and operation
- identification of system/component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)

**REQUIRED SKILLS AND KNOWLEDGE**

- techniques for identification of exhaust system/component faults
- exhaust system/component repair procedures and techniques
- enterprise quality procedures
- work organisation and planning processes
- Australian Design Rules for noise pollution, gas emissions (catalytic converters)

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- application of the full repair sequence to an exhaust system as per the Range Statement relative to the qualification being sought
- conducting repair in accordance with workplace and manufacturer/component supplier requirements and specifications
- equipment is presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the removal, repair and replacement of faulty exhaust system/components
- equipment, hand and power tooling appropriate to the removal, repair and replacement of faulty exhaust system/components
- activities covering mandatory task requirements
- specifications and work instructions

**EVIDENCE GUIDE****Method of assessment**

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Repair methods

Repair methods include:

- checking, comparing, removal/replacement, welding (OAW, GMAW/GTAW)
- repacking mufflers with replaceable baffles
- decoking exhaust components to unblock
- service spark arrester

#### Specific requirements

Specific requirements may include systems, including catalytic converters, replaceable baffles

#### Variables

Other variables may include:

- does not apply to outdoor power equipment where the exhaust system is one single component/unit

#### Repair methods and sequence

Repair methods and sequence are to include isolation of fault(s), dismantling, inspection and evaluation, replacement of system/components parts, assembly and completion of operational tests and documents

#### Faults

Faults to include rusted and chaffed pipe work

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices

<b>RANGE STATEMENT</b>	
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, lifting equipment, welding equipment, specialist tooling for removal/replacement, testing equipment, cutting equipment and decibel meters
<b>Materials</b>	Materials may include spare parts, welding consumables, filters and cleaning materials
<b>Communications</b>	Communications are to include but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	Sources of information/documents may include

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repairing exhaust systems</li><li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules and Environment Protection Regulations (Diesel Fuels)/National Environment Protection Measure for Diesel Vehicles Guidelines</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Mechanical Miscellaneous
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Emission and Exhaust
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## AURVEN2001 Apply environmental regulations and best practice in the body repair industry

### Modification History

Release	Comment
Release 1	Replaces AURV271403A Apply environmental regulations and best practice in the body repair industry Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to apply environmental regulations and best practice to avoid potential hazards during the preparation of vehicle bodies for repair.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involves the normal activities of a body repair shop, including removal and repair of metal and plastic panels and body components, and preparation of panels for painting.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in undertaking environmentally sound work practices.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply environmental regulations	<p>1.1.Reasons for ethical environmental practice in a body repair workshop are identified.</p> <p>1.2.Environmental responsibilities of staff in a body repair workshop are identified.</p> <p>1.3.Penalties for individual breaches of the legislation are identified.</p> <p>1.4.Waste is minimised, waste material, including sludge and solids is sorted and stored in bins for recycling or disposal.</p> <p>1.5.Packaging on goods received is sorted and reused or disposed of to recycling.</p>
2. Identify and avoid hazards to stormwater	<p>2.1.No waste water or contaminants are allowed to enter the stormwater system.</p> <p>2.2.Surface cleaning and preparation is undertaken in an impervious paved area and does not contaminate stormwater.</p> <p>2.3.Parts and components containing environmentally hazardous material are stored undercover in a sealed and bunded or drained treatment area.</p> <p>2.4.Paint, thinners/reducers are reused, recycled or stored in a bunded or drained area for collection by an approved disposal agent.</p> <p>2.5.Spill kit is located and used as needed to prevent stormwater contamination.</p> <p>2.6.Spills are cleaned up immediately and the workplace is kept clean to prevent stormwater pollution.</p>
3. Identify and avoid hazards to air quality	<p>3.1.Paint is mixed in a well-ventilated room.</p> <p>3.2.Abrasive sanding is undertaken in an enclosed booth or chamber.</p> <p>3.3.Clean-up of guns and spraying equipment is conducted in an environmentally safe manner.</p> <p>3.4.Hazards of airborne particles are identified, minimised and contained.</p> <p>3.5.Hazards of gases and fumes are identified, minimised and contained.</p>
4. Identify and avoid noise hazards	<p>4.1.Noise generating activities are minimised and carried out within approved operating hours.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to environmental procedures from legislation, regulations, policies, guidelines and workplace practices in a body repair workshop.
- communicate ideas and information to enable work undertaken is in accordance with environmental best practice, coordination of work with other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including the preparation of equipment and materials and selection of worksite to avoid environmental contamination, backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to minimise wastage, optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work
- use planning and checking techniques to avoid wastage and environmental contamination
- use the workplace technology related to environmental protection equipment

#### Required knowledge

A working knowledge of:

- relevant aspects of environmental legislation and its implications to work being undertaken
- characteristics and potential environmental impact of products used in the body repair process
- philosophy of prevent, reduce, reuse, recycle
- procedures for reporting machinery faults and material defects
- internal reporting procedures for significant environmental damage occurring in the workplace

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>• Apply safe handling requirements for equipment, products and material, including use of personal protective equipment.</li> <li>• Apply environmental regulations and best practice.</li> <li>• Identify materials used in the vehicle body repair process and assess their environmental impact.</li> <li>• Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain production output and product quality.</li> </ul> </li> <li>• Conduct operator maintenance on tooling and equipment to ensure environmental efficiency.</li> <li>• Work effectively with others.</li> <li>• Modify activities to cater for variations in workplace context and environment.</li> <li>• Use of a spill kit.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• Assessment may occur on the job or in a workplace simulated facility with process equipment, material, work instructions and deadlines.</li> <li>• Access to a body repair workshop with damaged vehicles, metal and plastic panels and fillers, spray booth, various spray guns, paint mixing equipment, recycling bins, vacuum cleaners/brooms, liquid, sludge and solid wastes.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</li> <li>• Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>• Assessment should be conducted over time and should be in conjunction with assessment of other units of competence.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the</li> </ul>

<b>EVIDENCE GUIDE</b>	
	holistic work role.

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Automotive body repair workshop</b>	<p>Automotive body repair workshop is to include:</p> <ul style="list-style-type: none"> <li>• panel removal and replacement procedures</li> <li>• panel surface cleaning and paint application</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements include:</p> <ul style="list-style-type: none"> <li>• WHS requirements, material safety data sheets, hazardous substances and dangerous goods code and safe operating procedures.</li> </ul>
<b>Work</b>	<p>Work is carried out in accordance with legislative obligations, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements</p>
<b>Tooling and equipment</b>	<p>Tooling and equipment are to include:</p> <ul style="list-style-type: none"> <li>• spill kits, recycling bins and drums, bunded or drained wash bays and preparation areas, spray booths and vacuum/air extraction equipment and waste water management system</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• material safety data sheets</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices. Face masks are available for rubbing back and painting</p>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• environmental legislation, regulations and Australian standards</li> <li>• workplace procedures relating to the use of tooling and equipment</li> <li>• work instructions, including job sheets/cards</li> <li>• workplace procedures relating to reporting</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>and communication of environmental issues</li><li>• manufacturer/component supplier specifications and operational procedures</li><li>• site environmental policy</li></ul>



## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Environment - Body
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## AURVEN3002 Monitor environmental and sustainability best practice in the automotive body repair industry

### Modification History

Release	Comment
Release 1	Replaces AURV371481A Implement and monitor environmental regulations and best practice in the body repair industry Performance Criteria updated to reflect sustainability

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to apply and monitor environmental regulations and sustainability best practice whilst undertaking repair of vehicle bodies in a manner that ensures protection of the environment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work involves the theory, knowledge and application of skills related to environmental regulations and sustainability best practice in the automotive body repair industry.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply and monitor environment regulations	<p>1.1.Reasons for <i>ethical environmental practice</i> in an automotive workplace are identified</p> <p>1.2.Environmental responsibilities and penalties for individual breaches of legislation and regulations are identified</p> <p>1.3.<i>Documents and procedures</i> relevant to environmental safety and <i>hazards</i> are applied</p> <p>1.4.Waste is minimised, waste materials, including sludge, solids and other wastes are sorted and stored in bins for recycling or disposal</p> <p>1.5.Packaging of goods is sorted and reused, disposed or recycled</p> <p>1.6.<i>Safety equipment and other material</i> necessary to support environmentally sound practices are identified and sourced</p>
2. Monitor and avoid contamination to water systems and land	<p>2.1.Wastewater and <i>contaminants</i> are identified and prevented from entering water systems or contaminating land</p> <p>2.2.Surface cleaning and preparation is undertaken in an impervious paved area and does not contaminate water systems or land</p> <p>2.3.Parts and components containing hazardous materials are drained and stored in a sealed container</p> <p>2.4.Liquid wastes are put into storage or recycling containers and placed in an undercover bunded area</p> <p>2.5.Paints, thinners are reduced, reused, recycled or stored in a bunded drained area for collection by an approved disposal agent</p> <p>2.6.Spill kit is located and used to prevent water or land contamination</p> <p>2.7.Spills are cleaned immediately and workplace is kept clean to prevent unintentional water or land contamination</p> <p>2.8.Hands are cleaned over drains connected to an oil/water separator or drums for collection of liquid waste</p>
3. Monitor and avoid hazards to air quality	<p>3.1.Spray painting is conducted in an approved spray booth</p> <p>3.2.Paint is mixed in a well-ventilated room</p> <p>3.3.Abrasive sanding is undertaken in an enclosed booth or chamber</p> <p>3.4.Welding is conducted in a well ventilated area</p> <p>3.5.All CFCs, HCFCs and blends from air conditioning systems are recovered for recycling or approved disposal during servicing or decommissioning</p> <p>3.6.Spray booth is maintained to ensure it is operating</p>

	<p>according to manufacturer and component supplier specifications</p> <p>3.7.Spray guns and equipment is cleaned in an environmentally safe manner</p> <p>3.8.Hazardous airborne particles are monitored, prevented, reduced and contained</p> <p>3.9.Hazardous gases and fumes are monitored, prevented, reduced and contained</p>
4. Monitor and avoid noise hazards	<p>4.1.Hazardous noise activities are monitored, prevented, reduced and contained</p> <p>4.2.Hazardous noise activities are carried out within approved operating hours and regulations</p>
5. Monitor and apply sustainability best practice	<p>5.1.<b><i>Sustainability best practice</i></b> is monitored and applied to minimise waste and potential damage to the environment according to workplace policies and procedures</p> <p>5.2.Methods to reduce resource consumption (water, electricity, fossil fuels, chemicals) are monitored and applied</p> <p>5.3.Environmental damage and breaches of environmental regulations are monitored and recorded</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- technical skills to:
  - collect, organise and interpret technical information related to recognising automotive body repair workplace situations that are potentially harmful to the environment
  - use spill kits
- communication skills to:
  - follow oral instructions
  - communicate ideas and information (verbal and written) as they relate to environmental regulations and sustainability best practice for an automotive body repair workplace
- initiative and enterprise to:
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand automotive mechanical workplace environmental procedures
  - read and apply environmental regulations for an automotive workplace
  - record environmental damage and breaches of environmental regulations
- numeracy skills to interpret instruments, gauges and measuring equipment
- planning and organising skills to:
  - identify risk factors and actions to minimise risk
  - identify planning, checking and inspection techniques to avoid environmental contamination and wastage
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - identify processes which contribute to improvements for sustainability best practice
- self-management skills to:
  - identify appropriate safety and environmental response equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to work with others and in a team by cooperating with team members
- technology skills to use workplace environmental safety-related technology to assist with clean and safe work practices.

#### Required knowledge

- aspects of environmental regulations and its implications for work being undertaken in an

## REQUIRED SKILLS AND KNOWLEDGE

- automotive workplace
- characteristics and potential environmental impact of products, equipment and machinery used in the automotive body repair workplace
- philosophy of prevention, reuse, reduce, recycle
- procedures for use of spill kit
- effects of pollution and methods to minimise it
- actions to be undertaken in case of significant environmental threat in the automotive body repair workplace
- monitoring and recording procedures for environmental damage and breaches of environmental regulations

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- Monitor and apply environmental regulations and sustainability best practice as they apply in an automotive body repair workplace
- Identify materials used in an automotive body repair workplace and assess their potential environmental impact
- Monitor and record environmental damage and breaches to environmental regulations.

#### Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- access to environmental legislation, regulations and best practice models
- access to an automotive workplace or simulated environment that accurately reflects automotive workshop working conditions
- access to workplace documents and reference images
- access to personal protective equipment of the type intended to

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<b>Overview of assessment</b>	
	be used in response to an environmental incident or accident.
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of an holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Ethical environmental practice</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• legislative obligations</li> <li>• environmental legislation</li> <li>• health regulations</li> <li>• hazardous materials handling procedures</li> <li>• organisation insurance requirements</li> <li>• discretion, judgement and problem-solving skills in undertaking environmentally sound work practices</li> </ul>
<p><b><i>Documents and procedures</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• hazardous substances register</li> <li>• workplace environmental procedures and safety instructions</li> <li>• dangerous goods code safe operating procedures</li> </ul>
<p><b><i>Hazards</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• toxic fumes and substances</li> <li>• flammable materials and fire hazards</li> <li>• spillages</li> <li>• waste and debris especially on floors, ladders, trolleys</li> <li>• electricity and water</li> <li>• toxic substances</li> <li>• damaged packing material or containers</li> <li>• broken or damaged equipment</li> <li>• unsafe lifting practices</li> </ul>
<p><b><i>Safety equipment and other material</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• personal protective equipment (PPE) including: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• hearing protection</li> <li>• gloves</li> <li>• other suitable protective clothing</li> <li>• safety footwear</li> </ul> </li> <li>• spill kit</li> <li>• absorbent materials</li> <li>• drip and catchment trays</li> <li>• waste bags</li> <li>• waste segregation systems</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Contaminants*** may include:

- solid or liquid wastes
- oil, fuel and grease
- hydrocarbon based degreasing agents and solvents
- acids
- alkaline wastes
- paint, lacquer, varnish
- glues and adhesive compounds
- household chemicals and pesticides

***Sustainability best practice*** may include:

- recycling waste
- energy conservation practices
- natural resources (water, etc.) conservation practices
- reusing
- environmental (green) purchasing practices
- noise minimisation

## Unit Sector(s)

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Environment - Body

## Custom Content Section

Not applicable.

## AURVEN4003 Plan and manage compliance with environmental regulations in the body repair industry

### Modification History

Release	Comment
Release 1	Replaces AURV471482A Plan and manage compliance with environmental regulations in the body repair industry Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence to plan and implement a management system that ensures protection of the environment in a body repair business.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work involves planning and management of normal activities of a body repair shop, including removal and repair of metal and plastic panels and body components, welding, preparation of panels for painting and vehicle painting.</p> <p>This unit is applicable to body repair qualifications at both Certificate IV and V levels.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills to improve environmental performance by reducing environmental risk and waste.</p> <p>Competence may be demonstrated in workplaces involved in the repair of vehicle bodies and replacement or painting of body panels which may be metal or plastic.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and manage compliance with environmental regulations	<p>1.1.Reasons for ethical environmental practice in a body repair workshop are identified.</p> <p>1.2.Environmental responsibilities of employers and staff in a body repair workshop are identified.</p> <p>1.3.Penalties for enterprise and employee breaches of legislation are identified.</p> <p>1.4.Waste products are minimised and facilities provided for waste materials to be stored in bins for recycling or disposal.</p> <p>1.5.Collection and recycling arrangements are sourced and implemented for liquids, sludge, solids and other waste.</p> <p>1.6.Suppliers with minimal excess packaging on goods received are sourced and packaging on goods received is sorted and disposed of.</p> <p>1.7.Waste and energy conservation strategies are identified and implemented.</p>
2. Manage potential hazards to stormwater system to avoid contamination	<p>2.1.Systems are in place to ensure waste water does not enter stormwater system.</p> <p>2.2.All drains are identified on a worksite map or directly indicating where they flow.</p> <p>2.3.Trade waste permits are in place.</p> <p>2.4.Impervious paved, undercover and bunded or drained treatment area(s) are provided and used for surface cleaning and preparation.</p> <p>2.5.Undercover and bunded or drained area(s) are provided and used for storage of parts and components containing environmentally hazardous material.</p> <p>2.6.Clearly identifiable storage or recycling containers are provided for liquid wastes.</p> <p>2.7.Oil separator and pits are cleaned and maintained regularly as per manufacturer/component supplier specifications.</p> <p>2.8.Spill kit is provided and used as needed to prevent stormwater contamination by staff trained in its use.</p> <p>2.9.Workplace is kept clean to prevent unintentional stormwater pollution.</p>
3. Manage potential hazards to air quality	<p>3.1.Compliant spray booth is provided and maintained with all spray painting conducted in it.</p>

ELEMENT	PERFORMANCE CRITERIA
to avoid contamination	<p>3.2.A well-ventilated room attached to spray booth is provided for paint mixing.</p> <p>3.3.An enclosed booth or chamber is provided for all abrasive sanding to be undertaken in.</p> <p>3.4.A well-ventilated area is provided for welding activities.</p> <p>3.5.All CFCs, HCFCs and blends from air conditioning systems are recovered for recycling or approved disposal during servicing or decommissioning.</p> <p>3.6.Clean up of spray guns and spraying equipment is conducted in an environmentally safe manner.</p> <p>3.7.Hazards of gases and fumes are identified, minimised and contained.</p>
4. Minimisation of noise hazards is planned and managed	<p>4.1.Noise generating activities are minimised and carried out within approved operating hours.</p> <p>4.2.Fixed machinery is fitted with silencers or surrounded by noise containment material.</p>
5. Manage systems	<p>5.1.An environmental policy and contingency plan suitable to the needs of business is developed and implemented.</p> <p>5.2.Waste to landfill is calculated and possible savings through reuse and recycling are calculated.</p> <p>5.3.Payback period on environmental equipment is calculated.</p> <p>5.4.Staff adherence to environmental responsibilities is managed.</p> <p>5.5.Environmental records are accurately and legibly maintained and stored securely in a form accessible for reporting procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to environmental procedures from legislation, regulations, policies, guidelines, standards and workplace best

## REQUIRED SKILLS AND KNOWLEDGE

practice in a body repair business

- communicate ideas and information to enable work undertaken is in accordance with environmental best practice. support from stakeholders is actively sought for implementing suitable innovation and continuous improvement
- plan and organise activities, including preparation of equipment and materials, recycling and waste management system and selection of worksite to avoid environmental contamination, backtracking, workflow interruptions or wastage
- promote work with others and in a team by recognising dependencies and using cooperative approaches to minimise wastage, optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for work and calculate wastage rates of various methods
- use planning, checking and inspection techniques to avoid environmental contamination and wastage
- use workplace technology related to environmental protection and recycling equipment

### Required knowledge

A working knowledge of:

- aspects of environmental legislation and its relationship with WHS, financial and risk management
- requirements for trade waste permits
- spill clean-up procedures
- characteristics and potential environmental impact of products used in the body repair process
- philosophy of sustainability through prevention, reuse, reduce, recycle
- procedures for rectifying machinery faults and material defects
- action to be taken in case of significant environmental threat in the workplace
- reporting procedures for significant environmental damage occurring in the workplace
- cleaner production and eco-efficient strategies to avoid production of waste

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Plan and manage safe handling requirements for equipment, products and materials, including use of personal protective equipment.
- Plan and manage environmental protection procedures in business.
- Identify materials used in the repair process and assess and manage their environmental impact.
- Ensure that effective recycling processes are in place.
- Plan and manage work instructions, operating procedures and inspection processes to:
  - minimise risk of injury to self and others
  - maintain a clean workplace
  - prevent damage and wastage of goods, equipment and products
  - dispose of waste in accordance with legislative requirements and best practice
  - maintain production output and product quality.
- Report significant environmental damage or spills.
- Plan and manage maintenance of spray booth and spray equipment to ensure environmental efficiency.
- Manage effective planning and team work related to environmental best practice.
- Develop/implement or audit an existing business environmental policy which covers at a minimum: waste, recycling, hazards to stormwater, air quality, noise, energy minimisation and costs.
- Modify activities to cater for variations in workplace context and environment.

##### Context of, and specific resources for assessment

- Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.
- Access to a body repair workshop with damaged vehicles, metal and plastic panels/components repair equipment and fillers, spray booth, various spray guns, paint mixing equipment, recycling bins, banded or drained preparation are and/or wash bays, quick break degreasing agents

## EVIDENCE GUIDE

	<p>liquid, sludge and solid wastes.</p> <ul style="list-style-type: none"> <li>• Access to: <ul style="list-style-type: none"> <li>• water based, acrylic, two pack paints and thinners/reducers.</li> </ul> </li> <li>• Access to a bunded or drained system, recycling systems, oil/water separator and trade waste in a body repair workshop.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</li> <li>• Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>• Assessment should be conducted over time and should be in conjunction with assessment of other units of competence.</li> <li>• Assessment of this competence is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance of the final outcome/product or authorisation for use by a component authority.</li> <li>• Assessment must confirm inference that competence is able not only to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>

## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Automotive body repair workshop</b>	<p>Automotive body repair workshop includes:</p> <ul style="list-style-type: none"> <li>• panel removal, repair and replacement</li> <li>• panel surface cleaning and paint application.</li> </ul>
<b>WHS</b>	<p>WHS requirements include legislation, material safety data sheets, hazardous substances and dangerous goods code and safe operating procedures.</p>
<b>Legislative requirements</b>	<p>Work is carried out in accordance with legislative obligations, environmental legislation, WHS regulations, manual handling procedures and organisation insurance requirements.</p>
<b>Tooling and equipment</b>	<p>Tooling and equipment are to include spill kits, recycling bins and drums, spray gun washers, bunded/drained wash bays, spray booths, vacuum/air extraction equipment, oil/water separator, waste water management systems, quick break degreasing compounds and silt traps.</p>
<b>Resources</b>	<p>Resources may include pressure washing and facilities for the use of recycled water and containment facilities for hazardous substances.</p>
<b>Materials</b>	<p>Materials may include materials data safety sheets, manufacturer/component supplier specifications, environmental records, costings of equipment and waste removal, and may include staff environmental induction materials.</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices. Face masks are available for rubbing back and painting.</p>
<b>Information and procedures</b>	<p>Information and procedures may include:</p>

## RANGE STATEMENT

	<ul style="list-style-type: none"><li>• environmental legislation, regulations and advice</li><li>• workplace procedures for use of tooling and equipment</li><li>• work instructions and procedures</li><li>• worksite environmental policy</li><li>• workplace procedures relating to reporting and communication</li><li>• manufacturer/component supplier specifications and operational procedures</li><li>• local council and waterways regulation.</li></ul>
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## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Environment - Body
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## AURVGA3001 Determine vehicle rescue method and costs

### Modification History

Release	Comment
Release 1	<p>Replaces AURV328916A Determine vehicle rescue method and ascertain cost</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to inspect damaged vehicles, determine rescue method and ascertain cost of recovery.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, survey of the accident scene, selection of the rescue method, identifying rescue costs and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine the job requirements, including job sheets, recovery methods and costing information.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</li><li>1.4. Vehicle to be rescued is identified.</li><li>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</li><li>1.6. Procedures are determined to minimise waste material/ components.</li><li>1.7. Procedures are identified for maximising energy efficiency while completing the job.</li></ul>
2. Survey accident scene and decide vehicle rescue method	<ul style="list-style-type: none"><li>2.1. Details are obtained by visual surveillance of rescue scene.</li><li>2.2. Details are obtained from appropriate persons.</li><li>2.3. All areas of surveillance are conducted within legal parameters and enterprise guidelines.</li><li>2.4. Work is completed without causing damage to any component or system.</li><li>2.5. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li></ul>
3. Prepare rescue cost details	<ul style="list-style-type: none"><li>3.1. Information is accessed from sources to enable preparation of costing details.</li><li>3.2. Options for vehicle recovery are considered.</li><li>3.3. Costing of rescue operation is carried out using approved methods in accordance with legislative requirements and enterprise guidelines.</li><li>3.4. Costing is forwarded for processing/invoicing/filing.</li><li>3.5. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for vehicle rescue method and cost implications
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to determination of vehicle rescue method and cost, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- legislation
- industry practices
- technical information
- manufacturer/component supplier/company policies
- pick up/loading procedures
- towing procedures
- costing procedures
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- determining vehicle rescue method
- detailing accurate rescue costing.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to determination of vehicle rescue method and cost
- equipment, hand and power tooling appropriate to determination of vehicle rescue method and cost
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

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	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Details</b>	Detail to be obtained and considered includes location details (e.g., in ditch, traffic hazards) type of load, size and type of vehicle to be rescued and type of tow (accident roster or general tow).
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.

<b>RANGE STATEMENT</b>	
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include torch, watch, work light, calculator and communication equipment.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to determination of vehicle rescue method and cost</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	
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## AURVGA3002 Recover vehicles

### Modification History

Release	Comment
Release 1	Replaces AURV328961A Recover vehicle Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence required to recover a vehicle by transporting and towing.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	The unit includes identification and confirmation of work requirement, preparation for work, selecting the recovery method, preparing the recovery vehicle and the vehicle to be recovered, operating the recovery vehicle, cleaning up the recovery worksite and completion of work finalisation processes, including clean-up and documentation.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, recovery types, vehicles preparation and recovery procedures.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Vehicle and method of recovery are identified.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</p> <p>1.6. Procedures are determined to minimise waste material/ components.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Ascertain type of recovery	<p>2.1. Details are obtained by visual surveillance of recovery scene.</p> <p>2.2. Information is obtained from officials at scene.</p> <p>2.3. Hazards are recognised and included in requirements for recovery.</p> <p>2.4. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Prepare vehicle to be recovered for tow/lift	<p>3.1. Vehicle is prepared for tow/lift using recognised enterprise guidelines and legislative requirements.</p> <p>3.2. Vehicle is prepared for recovery without causing damage to any component or system.</p> <p>3.3. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Prepare recovery vehicle for tow/lift	<p>4.1. Recovery vehicle is prepared using recognised enterprise guidelines and legislative requirements.</p> <p>4.2. Recovery vehicle is prepared without causing damage to any component or system.</p> <p>4.3. All activities are carried out according to industry regulations/guidelines, WHS legislation, statutory requirements and enterprise procedures/policies.</p>
5. Operate recovery vehicle	<p>5.1. Vehicle/equipment is operated using recognised industry guidelines and legislative requirements.</p> <p>5.2. Lifting and loading procedures are followed.</p> <p>5.3. Vehicle is operated without causing damage to any</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>component or system.</p> <p>5.4.Recovered vehicle is safely conveyed to agreed destination.</p> <p>5.5.All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
6. Clean up recovery worksite	<p>6.1.Area of recovery and its near vicinity is cleared of debris and dangerous objects/hazardous materials.</p> <p>6.2.Worksite is cleaned without causing damage to any component or system.</p> <p>6.3.Clean-up procedures are completed within recognised enterprise guidelines and legislative requirements.</p>
7. Clean up work vehicle and maintain equipment	<p>7.1.Material that can be reused is collected and stored.</p> <p>7.2.Waste and scrap is removed following workplace procedure.</p> <p>7.3.Equipment and work vehicle are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>7.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>7.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>7.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for recovery type, preparation of vehicles, recovery procedure and worksite clean-up requirements
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to recovery of vehicles, including the use of specialist recovery equipment, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental regulations
- technical information
- hazard identification and management procedures
- pick up/loading procedures
- manufacturer/component supplier recommended towing procedures and techniques
- manual handling procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying pick up/loading procedures
- applying vehicle protection methods
- completing transporting and towing procedures
- completing area rehabilitation
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to recovery of vehicles
- equipment, hand and power tooling appropriate to recovery of vehicles
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

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- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Recovery</b>	Recovery may be for damaged/broken down vehicle or transportation of vehicle
<b>Recovery vehicle</b>	Recovery vehicle may include tow truck, tilt tray, trailer, dolly wheels, low loader.
<b>Recovery methods</b>	Recovery methods are to include: <ul style="list-style-type: none"> <li>• preparation for lifting, loading and towing</li> <li>• lifting, loading, towing, securing, cleaning up recovery area (e.g. broken glass, debris).</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid

<b>RANGE STATEMENT</b>	
	requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, chains, slings, ropes, safety equipment, towing bar, jack, shovel, broom, remote lights, signs, torch, watch, work light, air lines and fittings, reduction blocks, and communication equipment.
<b>Materials</b>	Materials may include gloves, industry-specific stationery and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to street directory, verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to recovery of vehicles</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>requirements</li><li>instructions issued by authorised enterprise or external persons</li><li>Australian Standards.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	
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## AURVLN2001 Apply legal requirements for vehicle dismantlers

### Modification History

Release	Comment
Release 1	Replaces AURV228603A Apply legal requirements for vehicle dismantlers  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to assess, interpret and apply legal requirements for vehicle dismantlers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine job requirements, including job sheets and quality and quantity of material.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</li><li>1.4. Hand, power tooling and safety equipment are identified and checked for safe use.</li><li>1.5. Products are determined to minimise waste material.</li><li>1.6. Procedures are identified for maximising energy efficiency while completing the job.</li></ul>
2. Apply legal requirements for vehicle dismantlers	<ul style="list-style-type: none"><li>2.1. Legal requirements for vehicle dismantlers are identified and accessed.</li><li>2.2. Vehicle/component is dismantled according to industry/ enterprise guidelines.</li><li>2.3. Customer is served according to consumer legislation.</li></ul>
3. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>3.1. Material that can be reused is collected and stored.</li><li>3.2. Waste and scrap is removed following workplace procedures.</li><li>3.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</li><li>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</li><li>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</li><li>3.6. Tooling is maintained in accordance with workplace procedures.</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to laws, regulations and codes of practice work orders, plans and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements and establish quality checks
- use workplace technology related to the application of legal requirements for vehicle dismantlers, including the use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- legal requirements for vehicle dismantlers
- consumer legislation
- industry codes of practice
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying legal requirements for vehicle dismantler.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - access to industry legislation, regulations and codes of practice
  - material relevant to the application of legal requirements for vehicle dismantlers
  - equipment, hand and power tooling appropriate to the application of legal requirements for vehicle dismantlers
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods include:

- advising customers on components/parts
- removing components from vehicles
- advising customers on warranties/replacements

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of

<b>RANGE STATEMENT</b>	
	equipment <ul style="list-style-type: none"> <li>• extinguishing fires</li> <li>• enterprise first aid</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• tooling and equipment relevant to dismantling vehicles</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• cleaning materials</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the application of legal requirements for vehicle dismantlers</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Regulatory or Legal - Body
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## AURVTA2001 Prepare vehicle, components and equipment for customer use

### Modification History

Release	Comment
Release 1	Replaces AURV231649A Prepare vehicle/component/equipment for customer use Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to clean, and perform a final inspection of repaired/manufactured/ modified vehicle/component/equipment before delivery to a customer.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine work requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Clean vehicle/ component/equipment for delivery	<p>2.1. Vehicle/component/equipment is cleaned in the prescribed manner, to industry standard and secured in preparation for customer pick up.</p> <p>2.2. Cleaning is completed without causing damage to component or system.</p> <p>2.3. Cleaning operations are carried out according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Deliver/hand-over vehicle/equipment/ component to customer	<p>3.1. Checklist and repair quotation is used to ensure operation of vehicle/component/equipment systems.</p> <p>3.2. Service, operating and warranty requirements are explained to customer.</p> <p>3.3. Safety features are explained to the customer.</p> <p>3.4. Final inspection is completed prior to hand-over.</p> <p>3.5. Operations are carried out according to industry standards/ regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for preparing vehicle/ component/equipment for customer use
- identifying safety and warranty information
- identifying service/repair information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- explaining work outcomes to customers
- listening and following verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to the preparation of vehicle/component/equipment for customer use, including the use of computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- environmental requirements for the disposal of substances
- cleaning agents
- technical information
- vehicle safety requirements
- vehicle/component systems operation
- cleaning procedures
- pre-delivery/inspection procedures
- testing procedures
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- applying pre-delivery/inspection procedures
- applying cleaning procedures
- applying testing procedures.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated automotive worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the preparation of vehicle/component/equipment for customer use
  - equipment, hand and power tooling appropriate to the preparation of vehicle/component/equipment for customer use
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### **Vehicles, components and equipment**

Vehicles, components and equipment may include:

- vessels, including life jackets, flares and rescue equipment
- bicycles, including helmets
- trailers
- outdoor power equipment
- other components/assemblies/accessories

#### **Preparation methods**

Preparation methods are to include:

- manual or machine assisted cleaning
- visual inspection and testing
- checklists for systems operation
- written and verbal communication

#### **WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### **Personal protective equipment**

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### **Safe operating procedures**

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic

<b>RANGE STATEMENT</b>	
	substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• testing equipment</li> <li>• car washes</li> <li>• chemical baths</li> <li>• hot washes</li> <li>• high-pressure cleaners</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• polishes</li> <li>• paint protection agents</li> <li>• glass cleaners</li> <li>• chrome cleaners</li> <li>• upholstery cleaners</li> </ul>

**RANGE STATEMENT****Communications**

Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers

**Information/documents**

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- safe work procedures related to the preparation of a vehicle/component/equipment for customer use
- regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian standards

**Unit Sector(s)****Unit sector**

Vehicle body

**Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical
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## AURVTA3002 Remove and replace supplementary restraint systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURV327164A Remove and replace supplementary restraint systems (SRS)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to remove and replace units/assemblies, such as air bags located in steering wheel assemblies, dash panelling, doors and other locations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, the deactivation and removal of systems, the replacement and recommissioning of systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit covers removal and replacement of supplementary restraint systems located in steering wheel assemblies, dash panelling, doors and other locations.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. WHS requirements, including personal protection needs are observed throughout the work.</li><li>1.4. Material for removal and replacement is selected.</li><li>1.5. Equipment and tooling are identified and checked for safe and effective operation.</li><li>1.6. Procedures are determined to minimise waste material.</li><li>1.7. Procedures are identified for maximising energy efficiency while completing the job.</li></ul>
2. Deactivate and remove supplementary restraint systems	<ul style="list-style-type: none"><li>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</li><li>2.2. The supplementary restraint system is deactivated and removed using approved methods, tooling and equipment.</li><li>2.3. The system is deactivated and removed without causing damage to any component or system.</li><li>2.4. Deactivation and removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li><li>2.5. System/components are tagged and stored to manufacturer/ component supplier and workplace standards.</li></ul>
3. Replace and recommission supplementary restraint systems	<ul style="list-style-type: none"><li>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</li><li>3.2. Supplementary restraint systems are replaced and recommissioned using approved methods, tooling and equipment.</li><li>3.3. Replacement and recommissioning are completed without causing damage to any component or system.</li><li>3.4. Replacement and recommissioning activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li><li>3.5. Workplace/equipment documentation is completed and processed to enterprise/manufacturer/component supplier requirements.</li></ul>

ELEMENT	PERFORMANCE CRITERIA
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for deactivation, removing, replacing and recommissioning supplementary restraint systems
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removal and replacement of supplementary restraint systems, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- deactivation and recommissioning procedures for supplementary restraint systems
- removal and replacement procedures for supplementary restraint systems
- use of tooling and equipment
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- deactivation, removal, replacement and recommissioning of not less than two supplementary restraint systems, of which one is to be steering wheel based (for those utilising *Steering and Suspension* descriptors, one system which is steering wheel based is sufficient)
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to removal and replacement of supplementary restraint systems
- equipment, hand and power tooling appropriate to removal and replacement of supplementary restraint systems
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance together with application of underpinning knowledge.</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Critical precautions

Critical precautions include:

- manufacturer/component supplier procedures which must be applied, as poor working practices are likely to damage the electronic system ECU and/or other components.

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, SRS deactivation, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.

#### Emergency procedures

Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.

#### Environmental requirements

Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.

<b>RANGE STATEMENT</b>	
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, electrical test meters, and special equipment for removal and replacement of systems.
<b>Materials</b>	Materials may include system consumables and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to removal and replacement of supplementary restraint systems</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle Body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURVTA3003 Inspect paint, trim and accessories and recommend repair procedures

### Modification History

Release	Comment
Release 1	<p>Replaces AURV465230A Inspect paint, trim and accessories and ascertain recommended repair procedures</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit identifies the competence required to inspect vehicle paint, trim and accessories and make recommendations regarding repair/replacement methods.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, determination of repair requirements, preparation of a written report, including repair recommendations and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets and inspection procedures.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Vehicle to be inspected is identified.</p> <p>1.5. Procedures are determined to minimise inspection time.</p>
2. Inspect vehicle paint, trim and accessories	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Inspection is carried out and recommendations prepared.</p> <p>2.3. Initial report of findings is completed in approved enterprise format.</p> <p>2.4. Inspection is achieved without causing damage to any component or system.</p> <p>2.5. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Prepare a written damage repair report	<p>3.1. Written damage inspection report is prepared with sufficient information to enable preparation of repair estimate/quote, including repair option.</p> <p>3.2. Damage inspection report is appropriate to type of damage sustained.</p> <p>3.3. Damage report refers to repair requirements identified, including in-house and sublet requirements.</p> <p>3.4. Damage report is prepared and presented according to industry and enterprise guidelines/requirements.</p>
4. Clean up work area and maintain equipment	<p>4.1. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.2. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.3. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.4. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for inspection of paint, trim and accessory damage to determine and recommend repair procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to inspecting damage and recommending repair procedures, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- manufacturer/component supplier/company policies
- inspection, damage assessment and test procedures
- repair procedures
- written communications and report writing relevant to application work organisation and planning processes
- enterprise quality processes.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• inspecting a range of vehicles with paint, trim and accessory damage and recommending repair procedure</li> <li>• preparing a written repair report.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to inspecting damage and recommending repair procedures</li> <li>• equipment, hand and power tooling appropriate to inspecting damage and recommending repair procedures</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also</p>

## EVIDENCE GUIDE

reinforce the integration of key competencies.

Assessment must satisfy the endorsed assessment.

Assessment may be applied under project related conditions and require evidence of process.

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Vehicles</b>	Vehicles may be any type or range.
<b>Resource requirements</b>	Resource requirements include enterprise specific tooling and equipment used for inspection and determining repair procedures.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.

<b>RANGE STATEMENT</b>	
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include enterprise specific tooling and equipment, including lighting systems, used for inspecting and determining repair procedures.
<b>Materials</b>	Materials may include solvents and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches.</li> <li>• Safe work procedures related to inspecting damage and recommending repair procedures.</li> <li>• Regulatory/legislative requirements pertaining to vehicle painting and finishing.</li> <li>• Engineer's design specifications and instructions.</li> <li>• Organisation work specifications and requirements.</li> <li>• Instructions issued by authorised enterprise or external persons.</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

Unit sector	Vehicle Body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical
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## AURVTA3004 Inspect vehicle systems and determine preferred repair action

### Modification History

Release	Comment
Release 1	Replaces AURT365130A Inspect vehicle systems and determine preferred repair action Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out an inspection of vehicle systems and determine repair and/or replacement methods.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>This unit of competence should be contextualised to the qualification to which it is being applied.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake inspection	<ul style="list-style-type: none"><li>1.1.Nature and scope of work requirements are identified and confirmed</li><li>1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work</li><li>1.3.Procedures and information such as workshop manuals and specifications, and tooling, are sourced</li><li>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared</li><li>1.5.Technical and/or calibration requirements for vehicle systems are sourced and support equipment is identified and prepared</li><li>1.6.Warnings in relation to working with vehicle systems are observed</li></ul>
2. Conduct inspection	<ul style="list-style-type: none"><li>2.1.Methods for inspection implemented in accordance with workplace procedures and manufacturer/component supplier specifications</li><li>2.2.Observations are noted during inspection</li><li>2.3.Documentation of observations are completed</li></ul>
3. Analyse inspection results	<ul style="list-style-type: none"><li>3.1.Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</li><li>3.2.Results are documented with evidence and supporting information</li><li>3.3.Preferred repair action is selected following analysis of options</li><li>3.4.Report, including repair recommendations, is prepared and forwarded to persons for action in accordance with workplace procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the determination of repair action, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with vehicles and equipment
- operating principles vehicle systems and their relationship to each other
- inspection procedures
- repair and replacement procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection of a range of vehicle systems in accordance with workplace requirements
- interpreting inspection results
- analysing repair options and selecting the most appropriate option
- completing report, including repair recommendations
- vehicle presentation to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the determination of repair action
- equipment, hand and power tooling appropriate to the determination of repair action
- activities covering mandatory task requirements
- specifications and work instructions

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package

Assessment methods must confirm consistency and accuracy

**EVIDENCE GUIDE**

of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- inspection and testing
- fault finding using aural, visual and operational assessments for defects
- repair option analysis
- report writing

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors

#### Emergency procedures

Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation

#### Environmental requirements

Environmental requirements are to include but are not limited to waste management, noise, dust and

RANGE STATEMENT	
	clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and load testing devices
<b>Materials</b>	Materials may include cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the determination of repair action</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle Body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical
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## AURVTG2001 Repair laminated glass

### Modification History

Release	Comment
Release 1	Replaces AURV233166A Repair laminated glass Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to repair chipped or cracked laminated glass.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, repairing chipped or cracked laminated glass, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Repair chipped or cracked laminated glass	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Laminated glass repairs are carried out in accordance with repair equipment manufacturer/component supplier specifications for methods, equipment and resin used.</p> <p>2.3. Work is completed without causing damage to component or system.</p> <p>2.4. Repair activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>2.5. Workplace documentation is completed and dealt with relevant to repair outcomes.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap are removed following workplace and environmental procedures.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for repairing laminated glass
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to repairing laminated glass, including the use of specialist tooling, measuring equipment and communication devices and the reporting/ documenting of results

#### Required knowledge

Required knowledge includes:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- measuring and testing procedures
- technical information
- manufacturer/component supplier/company policies
- glass repair methods
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- repairing a range of laminated glass.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to repairing laminated glass
  - equipment, hand and power tooling appropriate to repairing laminated glass
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.

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	<ul style="list-style-type: none"> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Repair methods</b>	Repair methods are to include: <ul style="list-style-type: none"> <li>• vacuum out gassing, gravity feed, pressure injection, capillary action, moisture removal and surface finishing</li> </ul>
<b>Laminated glass</b>	Laminated glass is to include: <ul style="list-style-type: none"> <li>• windscreens</li> </ul>
<b>Vehicles</b>	Vehicles may include: <ul style="list-style-type: none"> <li>• passenger type</li> <li>• commercial, agricultural equipment</li> <li>• recreational craft</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• mining equipment</li> <li>• forestry equipment</li> <li>• recreational boating</li> <li>• outdoor equipment</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of fire fighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management</p>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not</p>

<b>RANGE STATEMENT</b>	
	<p>limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• power tooling</li> <li>• cleaning equipment</li> <li>• repair equipment and protective covers</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• resins, solvents and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the repair of laminated glass</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> </ul>

**RANGE STATEMENT**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• Australian standards</li></ul> |
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Glazing
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## AURVTG2002 Remove and install rubber glazed windscreens

### Modification History

Release	Comment
Release 1	<p>Replaces AURV233363A Remove and install rubber glazed windscreens</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to remove and install rubber glazed windscreens.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal and installation of rubber glazed windscreens and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove rubber-glazed windscreen	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Removal is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>2.3. Workplace documentation is completed and dealt with relevant to removal outcomes.</p> <p>2.4. Removal is completed without causing damage to component or system.</p> <p>2.5. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Install rubber-glazed windscreen	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Installation is carried out in accordance with vehicle manufacturer/component supplier tolerances.</p> <p>3.3. Workplace documentation is completed and dealt with relevant to installation outcomes.</p> <p>3.4. Installation is completed without causing damage to component or system.</p> <p>3.5. Installation activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap are removed following workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>and environmental procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for the removal and installation of rubber-glazed windscreens
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the removal and installation of rubber-glazed windscreens, including the use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- removal and installation procedures
- technical information
- vehicle safety requirements
- manufacturer/component supplier/company policies
- test procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- removing and installing a range of rubber-glazed windscreens.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the removal and installation of rubber-glazed windscreens
  - equipment, hand and power tooling appropriate to the removal and installation of rubber-glazed windscreens
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

**EVIDENCE GUIDE**

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Removal and installation

Removal and installation may involve:

- glass components
- moulding/trims
- mirrors
- sun visors
- aerials
- electrical and mechanical components
- rubbers
- locking strips

#### Windscreens

Windscreens may be in:

- passenger/commercial type vehicles
- recreational equipment
- small commercial
- forestry and marine equipment

#### WHS requirements

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment\
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances.

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are

<b>RANGE STATEMENT</b>	
	<p>not limited to:</p> <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment</li> <li>extinguishing fires</li> <li>enterprise first aid requirements</li> <li>worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian standards</li> <li>internal company quality policy and standards</li> <li>enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>hand tooling, power tooling, cleaning equipment, sealing equipment, lifting equipment, scaffolds and cutting equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>windscreens, adhesives, solvents and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <p>verbal and visual instructions and fault reporting</p>

<b>RANGE STATEMENT</b>	
	and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the removal and installation of rubber-glazed windscreens</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Glazing
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## AURVTG2003 Remove and install butyl sealed windscreens

### Modification History

Release	Comment
Release 1	<p>Replaces AURV233463A Remove and install butyl sealed windscreens</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to remove and install butyl sealed windscreens in various applications.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal of windscreens, the installation of windscreens and their testing and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Materials for use are selected appropriate to the application.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove butyl sealed windscreen	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Removal is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>2.3. Removal is completed without causing damage to component or system.</p> <p>2.4. Workplace documentation is completed and dealt with.</p> <p>2.5. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Install butyl sealed windscreen	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Installation is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>3.3. Installation is completed without causing damage to component or system.</p> <p>3.4. Installation is tested in accordance with manufacturer/ component supplier and workplace requirements.</p> <p>3.5. Workplace documentation is completed and dealt with.</p> <p>3.6. Installation activities are carried out according to</p>

ELEMENT	PERFORMANCE CRITERIA
	industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap are removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for the removal and installation of butyl glazed windscreens
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal and installation of butyl sealed windows, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- removal and installation methods for butyl glazed windscreens
- technical information
- test procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- removing and installing a range of butyl glazed windscreens to manufacturer/component supplier requirements
- completing work within workplace time requirements
- presenting the vehicle to customer expectations
- completing workplace and equipment records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the removal and installation of butyl sealed windows
  - equipment, hand and power tooling appropriate to the removal and installation of butyl sealed windows
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Windscreens</b>	Windscreens may be those in: <ul style="list-style-type: none"> <li>passenger/commercial type vehicles, recreational equipment, small commercial vehicles, forestry equipment and marine craft</li> </ul>
<b>Removal and installation</b>	Removal and installation are to include: <ul style="list-style-type: none"> <li>glass components, moulding/trim, mirrors, sun visors, aerials, electrical and mechanical components, hot and cold butyl tapes and primers</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management.</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling, power tooling, cleaning equipment, sealing equipment, lifting equipment, scaffolds and cutting equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• adhesives, solvents and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the removal and installation of butyl sealed windows</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian</li> </ul>

**RANGE STATEMENT**

	<p>Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Glazing
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## AURVTG2004 Remove and install direct glazed windscreens

### Modification History

Release	Comment
Release 1	<p>Replaces AURV233563A Remove and install direct glazed windscreens</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to remove and install direct glazed windscreens in a variety of applications.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal of windscreens, installation of windscreens and their testing and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Materials for use are selected appropriate to the application.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove direct glazed windscreen	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Removal is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>2.3. Removal is completed without causing damage to component or system.</p> <p>2.4. Workplace documentation is completed and dealt with relevant to windscreen removal outcomes.</p> <p>2.5. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Install direct glazed windscreen	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Installation is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>3.3. Installation is completed without causing damage to component or system.</p> <p>3.4. Installation is tested in accordance with manufacturer/ component supplier and workplace requirements.</p> <p>3.5. Workplace documentation is completed and dealt with relevant to the installation outcomes.</p> <p>3.6. Installation activities are carried out according to</p>

ELEMENT	PERFORMANCE CRITERIA
	industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for the removal and installation of direct glazed windscreens
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal and installation of direct glazed windscreens, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- removal and installation methods for direct glazed windscreens
- technical information
- test procedures
- culture adhesive types and cure performance techniques and standards
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- removing and installing a range of direct glazed windscreens to manufacturer/component supplier; requirements
- completing work within workplace time requirements
- presenting the vehicle to customer expectations
- completing workplace and equipment records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the removal and installation of direct glazed windscreens
  - equipment, hand and power tooling appropriate to the removal and installation of direct glazed windscreens
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Windscreens

Windscreen may be in:

- passenger/commercial type vehicles, plant and agricultural equipment, recreational vehicles, mining equipment, forestry equipment and marine craft

#### Removal and installation

Removal and installation are to include:

- glass components, moulding/trims, mirrors, sun visors, aerials, electrical and mechanical components, rubbers, locking strips

#### Methods

Methods are to include:

- urethane bonded windscreen removal methods
- urethane bonded windscreen long and short installation methods
- encapsulated windscreen installation

#### WHS requirements

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

operational risk assessment and treatments associated with vehicular movement, toxic

<b>RANGE STATEMENT</b>	
	substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand tooling, power tooling, cleaning equipment, sealing equipment, lifting equipment, scaffolds, cutting equipment and leak testing equipment</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• adhesives, solvents and cleaning materials</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the removal and installation of direct glazed windscreens</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Glazing
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## AURVTG2005 Remove and install framed type windscreens

### Modification History

Release	Comment
Release 1	<p>Replaces AURV233663A Remove and install framed type windscreens</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to remove and install clamped/framed windscreens in various applications.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal, installation and testing of framed type windscreens and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Materials for use are selected appropriate to the application.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove windscreen assembly	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Removal is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>2.3. Removal is completed without causing damage to component or system.</p> <p>2.4. Workplace documentation is completed and dealt with relevant to windscreen removal outcomes.</p> <p>2.5. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Install windscreen assembly	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Installation is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>3.3. Installation is completed without causing damage to component or system.</p> <p>3.4. Installation is tested in accordance with manufacturer/ component supplier and workplace requirements.</p> <p>3.5. Workplace documentation is completed and dealt with relevant to windscreen installation outcomes.</p> <p>3.6. Installation activities are carried out according to</p>

ELEMENT	PERFORMANCE CRITERIA
	industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for the removal and installation of framed type windscreens
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the removal and installation of framed type windscreens, including the use of specialist tooling measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- removal and installation methods for framed type windscreens
- technical information
- test procedures
- glass and sealant types and selection processes
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- removing and installing a range of framed type windscreens to manufacturer/component supplier requirements
- completing work within workplace time requirements
- presenting the vehicle to customer expectations
- completing workplace and equipment records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the removal and installation of framed type windscreens
  - equipment, hand and power tooling appropriate to the removal and installation of framed type windscreens
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Framed type windows</b>	<p>Framed type windows may be in:</p> <ul style="list-style-type: none"> <li>passenger type vehicles, commercial (small and large) vehicles, plant and agricultural equipment, recreational vehicles, mining equipment, forestry equipment, marine craft and vintage vehicles</li> </ul>
<b>Removal and installation</b>	<p>Removal and installation are to cover:</p> <ul style="list-style-type: none"> <li>glass components, moulding/trims, mirrors, sun visors, aerials and electrical and mechanical components</li> </ul>
<b>Methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>clamped/framed installation methods</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in</li> </ul>

<b>RANGE STATEMENT</b>	
	proximity to others and worksite visitors
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling, power tooling, cleaning equipment, sealing equipment, lifting equipment, scaffolds and cutting equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• solvents, non-cured rubber, lubricants and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• sheets, diagrams or sketches</li><li>• safe work procedures related to the removal and installation of framed type windscreens</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Glazing
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## AURVTG2006 Apply window tinting

### Modification History

Release	Comment
Release 1	<p>Replaces AURV233849A Prepare surfaces and apply window tinting</p> <p>Unit code updated to meet policy requirements</p> <p>Minor change to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to prepare various surfaces and apply window tinting material.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, measuring and cutting of tinting materials, preparation of the surface, application of window tint, storage of window tinting materials and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Materials for use are selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure and cut tinting material/template	<p>2.1. Information is accessed from manufacturer/component supplier specifications and interpreted.</p> <p>2.2. Measurement, cutting and template production are performed according to accepted industry methods, materials and procedures.</p> <p>2.3. Surfaces are measured, and materials and templates are cut without causing damage to component or system.</p> <p>2.4. Workplace documentation is completed and dealt with relevant to measuring and cutting outcomes.</p> <p>2.5. Measurement, cutting and template production are to be carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Prepare surfaces and apply window tinting material	<p>3.1. Information required for surface preparation and tinting is accessed from manufacturer/component supplier specifications and interpreted.</p> <p>3.2. Surface preparation is carried out using approved methods, materials and equipment, according to the specifications of the tinting material to be applied.</p> <p>3.3. Window tinting material is applied according to manufacturer/component supplier specifications and tolerances.</p> <p>3.4. Tinting applications are inspected and tested in accordance with authorised procedures prior to</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>placing into service.</p> <p>3.5.Work is completed without causing damage to component or system.</p> <p>3.6.Surface preparations and tinting applications are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>3.7.Workplace documentation is completed and dealt with relevant to the tinting outcomes.</p>
4. Store window tinting material	<p>4.1.Information relating to storage is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>4.2.Window tinting material is stored without causing damage to component or system.</p> <p>4.3.Storage is carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>4.4.Workplace documentation is completed and dealt with relevant to material storage outcomes.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap are removed following workplace and environmental procedures.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for surface preparation and window tinting material application
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the preparation of surfaces and the application of window tinting, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- the necessary cleaning agents and cleaning procedures
- technical information
- measuring and cutting procedures
- template production procedures and material
- surface preparation procedures
- tinting material storage procedures
- manufacturer/component supplier application methods for tinting materials
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- cleaning of surfaces before and after applying tinting
- measuring and cutting tint templates and materials
- applying tint film to a range of windows/surfaces in accordance with workplace and manufacturer/component supplier requirements.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the preparation of surfaces and the application of window tinting
  - equipment, hand and power tooling appropriate to the preparation of surfaces and the application of window tinting
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- selection of window tinting film
- measurement and template production
- cutting of the tint film
- application of the tint film

#### WHS requirements

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>cutting and application tooling required in preparation and application of window tinting</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>tinting and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>safe work procedures related to the preparation of surfaces and the application of window tinting</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>engineer's design specifications and instructions</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Glazing
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## AURVTG2007 Clean glass surfaces

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to prepare and clean glass surfaces to remove visible dirt and grime.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the cleaning of glass components and windscreens when fitted to an automotive vehicle. The selection of cleaning fluids, cleaning equipment and cleaning techniques is in line with industry standards.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Work is carried out according to award provisions. Vehicles may include light vehicles, commercial vehicles, heavy vehicles, and agricultural and recreational vehicles.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select and prepare glass-cleaning fluids and equipment	<p>1.1. <b>Glass-cleaning</b> fluids and equipment are selected and prepared according to workplace procedures</p> <p>1.2. <b>Personal protective equipment</b> is selected and used</p> <p>1.3. Workplace policies and procedures, including workplace health and safety (WHS) and environmental policies, are located and followed</p>
2. Set up for glass cleaning	<p>2.1. Work areas are cleared to allow set-up and activities to take place according to workplace policies and procedures</p> <p>2.2. Glass-cleaning activities are set up without causing damage to property and equipment</p> <p>2.3. Glass-cleaning fluids and equipment are set up according to workplace policies</p> <p>2.4. Glass-cleaning activities are carried out according to industry standards, <b>WHS</b> and <b>environmental requirements, legislation</b> and workplace policies</p>
3. Carry out glass cleaning	<p>3.1. Glass-cleaning procedures are carried out using approved materials, methods and equipment and according to industry and workplace standards relating to WHS and environmental sustainability</p> <p>3.2. Glass-cleaning fluids are applied without causing damage to vehicle or components</p> <p>3.3. Glass-cleaning fluids are removed using lint-free cloths</p> <p>3.4. Glass surfaces are finished to a streak-free standard</p>
4. Clean up and restore site to original condition	<p>4.1. Final clean-up is conducted to a <b>quality standard</b> without causing damage to vehicle or components</p> <p>4.2. Worksite is cleaned and restored to original condition</p> <p>4.3. Clean-up activities and storage of cleaning fluids are undertaken in line with WHS requirements and environmental legislation</p> <p>4.4. Equipment is cleaned and stored in appropriate storage area after use</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to:
  - adapt practice to suit glass-cleaning products and workplace equipment
  - recognise a workplace problem or potential problem and take action
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, material safety data sheets (MSDS), drawings and other reference documents
  - document cleaning products used
- numeracy skills to measure and calculate cleaning fluid requirements
- planning and organising skills to:
  - plan glass-cleaning job requirements following job specifications
  - ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to refer problems outside area of responsibility to appropriate persons
- self-management skills to:
  - select and use appropriate glass-cleaning products, materials, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, including codes of practice
- technical skills to use glass-cleaning fluids, materials, and specialist tools and equipment

#### Required knowledge

- different methods of cleaning for various applications
- different cleaning materials and equipment for various applications
- equipment safety requirements for various glass-cleaning activities and contexts
- WHS regulations, requirements, equipment and material relating to glass-cleaning activities, including personal safety requirements
- cleaning material MSDS specifications

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- clean glass surfaces
- observe workplace safety procedures and requirements
- select and apply correct glass-cleaning products and methods
- apply all WHS and safety standards
- observe MSDS information.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- materials relevant to glass-cleaning activities
- tools and equipment relevant for glass-cleaning activities
- specifications and work instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Glass cleaning</i></b> may include:	<ul style="list-style-type: none"> <li>• lint-free cleaning cloths</li> <li>• glass-cleaning fluids</li> <li>• chamois</li> <li>• squeegees</li> <li>• scrapers</li> <li>• chemicals and clean solutions</li> <li>• water hoses.</li> </ul>
<b><i>Personal protective equipment</i></b> :	<ul style="list-style-type: none"> <li>• is that prescribed under legislation, regulations, codes of practice, and workplace policies and practices</li> <li>• may include: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• personal protective clothing</li> <li>• safety footwear</li> <li>• gloves.</li> </ul> </li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• first aid equipment</li> <li>• safe handling of material</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• personal safety</li> <li>• safe use of tools and equipment</li> <li>• use of personal protective clothing</li> <li>• use of fire-fighting equipment</li> <li>• workplace policies</li> <li>• workplace safety.</li> </ul>
<b><i>Environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• waste management</li> <li>• clean-up policy and procedures.</li> </ul>
<b><i>Legislation</i></b> may include:	<ul style="list-style-type: none"> <li>• federal, state or territory, and local authorities administering Acts</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul>
<b><i>Quality standard</i></b> may include:	<ul style="list-style-type: none"> <li>• industry codes of practice</li> <li>• Australian standards</li> <li>• workplace quality procedures</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

- original equipment manufacturer-recommended cleaning procedures.

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Glazing

**Custom Content Section**

Not applicable.

## AURVTG3008 Cut and process flat laminated glass

### Modification History

Release	Comment
Release 1	Replaces AURV333215A Cut and process flat laminated glass Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to measure, mark, cut out and process flat laminated glass for installation into vehicles and equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, fabrication of templates and patterns, measurement, marking out, cutting and processing edges of glass and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Fabricate templates and patterns	<p>2.1. Materials are selected to fabricate templates.</p> <p>2.2. Template/pattern is marked out.</p> <p>2.3. Template/pattern is fabricated.</p>
3. Measure, mark and cut out glass	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Glass is measured, marked and cut out according to measurements and legislation using template and/or pattern.</p> <p>3.3. Work is completed without causing damage to any component or system.</p>
4. Process edges of glass	<p>4.1. Arris and bevels to edges of glass are completed within established enterprise guidelines.</p> <p>4.2. Workplace documentation is completed and dealt with relevant to glass edge processing outcomes.</p> <p>4.3. All edge processing activities are carried out in accordance with statutory and enterprise policy and procedures for WHS tolerances relative to the vehicle.</p>
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Waste and scrap are removed following workplace and environmental procedure.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>identified in accordance with workplace requirements.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for cutting and processing glass
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to cutting and processing of flat laminated glass, including the use of measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- manufacturer/component supplier/company policies
- glass cutting and processing procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques</li> <li>• completing preparatory activity in a systematic manner</li> <li>• fabricating templates and patterns</li> <li>• cutting and processing a range of flat laminated glass products</li> <li>• completing workplace records.</li> </ul>
<p><b>Context of, and specific resources for assessment</b></p>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to cutting and processing of flat laminated glass</li> <li>• equipment, hand and power tooling appropriate to cutting and processing of flat laminated glass</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<p><b>Method of assessment</b></p>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with</li> </ul>

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Work methods</b>	Work methods are to include manual and automatic cutting, fabrication of templates/patterns, maintenance and belt replacement on edge processing machine, and sharpening of cutting tooling.
<b>Specific requirements</b>	Specific requirements are to include laminated glass and edge processing equipment.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, cleaning equipment, repairing equipment, cutting equipment and polishers.
<b>Materials</b>	Materials may include solvents, templates, buffing equipment and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to cutting and processing of flat laminated glass</li> <li>• regulatory/legislative requirements pertaining to working with glass</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Glazing
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## AURVTG3009 Remove and install fixed body glass

### Modification History

Release	Comment
Release 1	Replaces AURV333763A Remove and install fixed body glass Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence required to remove and install fixed body glass in various applications.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	Work is carried out in accordance with award provisions
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, materials and equipment</p> <p>1.2. Job specifications are read and interpreted</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work</p> <p>1.4. Material for repair is selected</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation</p> <p>1.6. Procedures are determined to minimise waste material</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job</p>
2. Remove fixed body glass	<p>2.1. Removal is completed without causing damage to any component or system</p> <p>2.2. Information is accessed and interpreted from manufacturer/ component supplier specifications</p> <p>2.3. Removal of fixed body glass is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances</p> <p>2.4. Workplace documentation is completed and dealt with relevant to removal outcomes</p> <p>2.5. Removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies</p>
3. Install fixed body glass	<p>3.1. Installation is completed without causing damage to any component or system</p> <p>3.2. Information is accessed and interpreted from manufacturer/component supplier specifications</p> <p>3.3. Installation of fixed body glass is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances</p> <p>3.4. Workplace documentation is completed and dealt with relevant to installation outcomes</p> <p>3.5. Installation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies</p>
4. Clean up work area and maintain	<p>4.1. Material that can be reused is collected and stored</p> <p>4.2. Waste and scrap is removed following workplace and</p>

ELEMENT	PERFORMANCE CRITERIA
equipment	<p>environmental procedures</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures</p> <p>4.6. Tooling is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for removal and installation of fixed body glass
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to:
  - access, interpret and apply technical information
  - use tooling and equipment
  - removal and installation of fixed body glass

#### Required knowledge

Required knowledge of:

- removal and replacement methods
- measuring and testing procedures
- technical information
- equipment safety requirements
- personal safety requirements
- vehicle safety requirements
- manufacturer/component supplier/company policies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- selecting components/glass/sealants/adhesives/tooling and equipment
- removing and replacing fixed glass components
- adjusting fixed glass components
- safe working practices
- vehicle protection methods.

#### Context of and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job
- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable
- Prescribed outcome must be able to be achieved without direct supervision
- Access to vehicle and manufacturer/component supplier specifications as identified in the Range Statement and standard operating procedures

#### Method of assessment

- Assessment methods must confirm consistency of performance over time and in a range of workplace contexts
- Assessment should be by direct observation of tasks, questioning of underpinning knowledge and achievement of removal and installation outcome
- Assessment should be conducted over time and may be in conjunction with assessment of other units of competence

#### Guidance information for

**EVIDENCE GUIDE****assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods may include urethane, rubber, butyl, bolted and encapsulated installation

**Specific requirements**

Specific requirements are to include electrical system(s), glass components, mouldings/trims, electrical and mechanical components and systems drainage

**Vehicles**

Vehicles may include:

- passenger type
- commercial (small and large)
- plant and agricultural equipment
- recreational
- mining
- forestry
- marine craft
- caravans and motor homes
- outdoor equipment
- recreational boating

**WHS**

WHS practices must abide by State/industry WHS legislation

**Resources**

Resources may include:

- hand tooling, power tooling, cleaning equipment, sealing equipment, lifting equipment, scaffolds, cutting equipment, adhesives, solvents

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• industry standards and specification documents</li></ul>
<b>Information/ documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• vehicle manufacturer/component supplier specifications</li><li>• product manufacturer/component supplier specifications</li><li>• company operating procedures</li><li>• industry codes of practice</li><li>• customer report</li><li>• state/territory/federal statutory requirements, including Australian Design Rules</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle Body
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Glazing
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## AURVTG3010 Remove and install movable body glass

### Modification History

Release	Comment
Release 1	Replaces AURV333863A Remove and install movable body glass Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit covers the competence required to remove and install movable body glass in various applications.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	Work is carried out in accordance with award provisions.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Location of airbags and supplementary restraint systems that may be affected by work are identified.</p> <p>1.7. Procedures are determined to minimise waste material.</p> <p>1.8. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove movable body glass	<p>2.1. Removal is completed without causing damage to any component or system.</p> <p>2.2. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.3. Removal of movable body glass is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>2.4. Workplace documentation is completed and dealt with relevant to removal outcomes.</p> <p>2.5. Removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Install movable body glass	<p>3.1. Installation is completed without causing damage to any component or system.</p> <p>3.2. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.3. Installation of movable body glass is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>3.4. Workplace documentation is completed and dealt with relevant to installation outcomes.</p> <p>3.5. Installation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>

ELEMENT	PERFORMANCE CRITERIA
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for removal and installation of movable body glass
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to:
  - access, interpret and apply technical information
  - use tooling and equipment
- removal and installation of movable body glass

#### Required knowledge

A working knowledge of:

- removal and replacement methods
- measuring and testing procedures
- technical information
- equipment safety requirements
- personal safety requirements
- vehicle safety requirements
- manufacturer/component supplier/company policies

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- selecting components/glass/sealants/adhesives/tooling and equipment
- removing and replacing movable glass components
- adjusting movable glass components
- safe working practices, including precautions for working near airbags and supplementary restraint systems
- vehicle protection methods.

#### Context of, and specific resources for assessment

- Underpinning knowledge and skills may be assessed on or off the job.
- Access to vehicle and manufacturer/component supplier specifications as identified in the Range Statement and standard operating procedures.
- Assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- Prescribed outcome must be able to be achieved without direct supervision.

#### Method of assessment

- Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.
- Assessment should be by direct observation of tasks, questioning of underpinning knowledge and achievement of removal and installation outcome.
- Assessment should be conducted over time and may be in conjunction with assessment of other units of competence.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

#### Guidance information for assessment

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods are to include bolted, rubber and adhesive installation methods.
<b>Specific requirements</b>	Specific requirements are to include electrical system(s), glass components, mouldings/trim, electrical and mechanical components and systems drainage.
<b>Vehicles</b>	<p>Vehicles may include:</p> <ul style="list-style-type: none"> <li>• passenger</li> <li>• commercial (small and large)</li> <li>• plant and agricultural equipment</li> <li>• recreational</li> <li>• mining</li> <li>• forestry</li> <li>• marine craft</li> <li>• caravans and motor homes</li> <li>• outdoor equipment</li> <li>• recreational boating.</li> </ul>
<b>Unit context</b>	<p>WHS practices must abide by:</p> <ul style="list-style-type: none"> <li>• state/territory/industry WHS legislation</li> </ul>
<b>Resources</b>	<p>Resources may include:</p> <ul style="list-style-type: none"> <li>• Hand tooling, power tooling, cleaning equipment, sealing equipment, lifting equipment, scaffolds, cutting equipment, adhesives, sealants and solvents.</li> <li>• Industry standards and specification documents.</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• vehicle manufacturer/component supplier specifications</li><li>• product manufacturer/component supplier specifications</li><li>• company operating procedures</li><li>• industry codes of practice</li><li>• customer report</li><li>• state/territory/federal statutory requirements, including Australian Design Rules.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Glazing
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## AURVTG3011 Install side windows

### Modification History

Release	Comment
Release 1	Replaces AURV334031A Install side windows Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to fabricate templates, mark out and cut panels, prepare cut edges and install side windows.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, fabrication and use of templates, marking out and cutting of panels/trim, preparation of cut edges, installation of windows and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for installation is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure, mark out and fabricate template	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Suitable materials are selected and template is fabricated to shape and size.</p> <p>2.3. Templates are completed without causing damage to any component or system.</p> <p>2.4. Fabricating and measuring activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Mark out, cut panels/trim and prepare cut edges	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Template is used to mark out areas to be cut.</p> <p>3.3. Panels/trim are cut using approved methods and equipment in accordance with specifications.</p> <p>3.4. Panels/trim are prepared in readiness for installing window.</p> <p>3.5. Panels are reinforced to comply with manufacturer/ component supplier requirements.</p> <p>3.6. Work is completed without causing damage to any component or system.</p> <p>3.7. Marking out, cutting and preparation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>

ELEMENT	PERFORMANCE CRITERIA
4. Install window	<p>4.1.Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>4.2.Window is installed to specification.</p> <p>4.3.Installed window is checked for operation and leak tested.</p> <p>4.4.Installation is achieved without causing damage to any component or system.</p> <p>4.5.All installation and checking is performed according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap are removed following workplace and environmental procedures.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for installing windows
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to installation of side windows, including the use of specialist tooling, measuring equipment and communication devices and the reporting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- enterprise/manufacturer/component supplier policies
- technical information
- marking out procedures
- measuring procedures
- cutting procedures (panels and trim)
- window installation procedures
- panel reinforcing methods
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- preparing and installing a range of side windows with a minimum of one requiring panel reinforcement
- completing workplace records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to installation of side windows
- equipment, hand and power tooling appropriate to installation of side windows
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **Bold italicised** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Installation methods</b>	Installation methods are to include measuring, marking out, cutting, preparing cut edges, reinforcing cut panels, installing side windows, leak testing installed side window and sealing, testing operation and cleaning.
<b>Side windows</b>	Side windows may be installed in vehicles, trailers, outdoor equipment, caravans, agricultural equipment and recreational boating.
<b>WHS</b>	WHS requirements are to be in accordance with

<b>RANGE STATEMENT</b>	
	legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, measuring equipment, marking out equipment, cutting equipment, vehicle protection equipment and templates.

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include template materials, rubber sections, adhesives and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to installation of side windows</li><li>• regulatory/legislative requirements pertaining to working with glass</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Glazing
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## AURVTG3012 Remove and install heavy vehicle rubber and urethane glazed windscreens

### Modification History

Release	Comment
Release 1	<p>Replaces AURV334163A Remove and install rubber and urethane (heavy vehicle) glazed windscreens</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to remove and install rubber and/or urethane glazed windscreens in trucks, buses and coaches.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal and installation of windscreens and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit covers rubber and urethane glazed windscreen removal and installation in buses, coaches, passenger/commercial type vehicles and trucks.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove rubber/urethane glazed windscreen	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Tooling and equipment for removal and screen support are selected and used.</p> <p>2.3. Removal is carried out in accordance with vehicle manufacturer/component supplier specifications and tolerances.</p> <p>2.4. Removal is completed without causing damage to any component or system.</p> <p>2.5. Removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.6. Workplace documentation is completed and dealt with relevant to removal outcomes.</p>
3. Install rubber/urethane glazed windscreen	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Tooling and equipment for installation and screen support are selected and used.</p> <p>3.3. Installation is carried out in accordance with vehicle manufacturer/component supplier and tolerances.</p> <p>3.4. Drying times are adhered to according to job requirements and manufacturer/component supplier specifications.</p> <p>3.5. Installation is completed without causing damage to any component or system.</p> <p>3.6. Installation activities are carried out according to industry regulations/guidelines, WHS legislation,</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>and enterprise procedures/policies.</p> <p>3.7.Workplace documentation is completed and dealt with relevant to installation outcomes.</p>
<p>4. Clean up work area and maintain equipment</p>	<p>4.1.Material that can be reused is collected and stored.</p> <p>4.2.Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for removal and installation of rubber and urethane glazed windscreens in trucks, busses and coaches
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removal and installation of rubber and methane glazed windscreens, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- removal and installation procedures, including cut out, windscreen support, drying times and finishing techniques
- technical information
- manufacturer/component supplier/company policies
- test procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• removing and installing a range of rubber/urethane glazed windscreens</li> <li>• completing workplace records.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to removal and installation of rubber and urethane glazed windscreens</li> <li>• equipment, hand and power tooling appropriate to removal and installation of rubber and methane glazed windscreens</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with</li> </ul>

## EVIDENCE GUIDE

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Installation

Installation may involve/require glass components, moulding/trim, mirrors, sun visors, aerials, electrical and mechanical components, rubbers and locking strips.

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials,

<b>RANGE STATEMENT</b>	
	use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, cleaning equipment, sealing equipment, lifting and supporting equipment, scaffolds and cutting equipment.
<b>Materials</b>	Materials may include adhesives, solvents, parts, moulding/trim, rubbers, locking strips and cleaning materials.

## **RANGE STATEMENT**

### **Communications**

Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.

### **Information/documents**

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to removal and installation of rubber and urethane glazed windscreens
- regulatory/legislative requirements pertaining to working with glass
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards.

## **Unit Sector(s)**

### **Unit sector**

Vehicle body

## **Co-requisite units**

Not applicable.

## Competency field

Competency field	Technical - Glazing
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## AURVTG3013 Remove and install large vehicle windscreens

### Modification History

Release	Comment
Release 1	<p>Replaces AURV334263A Remove and install large vehicle windscreens</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to remove and install windscreens in "large" mining and agricultural vehicles.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal and installation of windscreens, testing of installation and completion of work finalisation processes, including clean-up and documentation.</p> <p>Large vehicles are defined as, including major mining and agricultural vehicles or equivalent.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection and specific needs when working at heights, are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove vehicle windscreen	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Tooling and equipment for removal and screen support are selected and used.</p> <p>2.3. Work height safety harnesses/equipment and procedures are adopted.</p> <p>2.4. Removal is carried out in accordance with vehicle manufacturer/component supplier and tolerances.</p> <p>2.5. Removal is completed without causing damage to any component or system.</p> <p>2.6. Removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.7. Workplace documentation is completed and dealt with relevant to removal outcomes.</p>
3. Install vehicle windscreen	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Type of glass for application is selected and used.</p> <p>3.3. Equipment for cutting windscreens from flat laminated glass is selected and used.</p> <p>3.4. Tooling and equipment for installation and screen support are selected and used.</p> <p>3.5. Work height safety harnesses/equipment and procedures are adopted.</p> <p>3.6. Installation is carried out in accordance with vehicle</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>manufacturer/component supplier tolerances.</p> <p>3.7.Installation is completed without causing damage to any component or system.</p> <p>3.8.Drying times adhered to according to job requirements and manufacturer/component supplier specifications.</p> <p>3.9.Installation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>3.10. Workplace documentation is completed and dealt with relevant to installation outcomes.</p>
4. Clean up work area and maintain equipment	<p>4.1.Material that can be reused is collected and stored.</p> <p>4.2.Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for removal and installation of rubber/urethane glazed windscreens in "large" mining and agricultural vehicles
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removal and installation of windscreens, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- equipment safety requirements, including safety harnesses
- types of glass, including special acoustic glass
- manufacturer/component supplier/company policy and procedures
- windscreen attachment methods, including frames, clamps and special rubber sections
- removal and installation procedures, including working at heights and support of heavy windscreens
- test procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- removing and installing a minimum of two different "large" vehicle windscreens
- completing workplace records.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to removal and installation of windscreens
- equipment, hand and power tooling appropriate to removal and installation of windscreens
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Removal and installation methods**

Removal and installation methods are to include frames, clamps, special rubber sections and glazed windscreen, cutting windscreens from flat laminated glass, and installing.

**Installation**

Installing may require/involve glass components, moulding/trim, mirrors, sun visors, aerials, electrical and mechanical components, rubbers, locking strips.

**WHS**

WHS requirements are to be in accordance with

<b>RANGE STATEMENT</b>	
	legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, cleaning equipment, sealing equipment, lifting and supporting equipment, safety harnesses, scaffolds and cutting equipment.

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include adhesives, solvents, installation consumables and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to removal and installation of windscreens</li><li>• regulatory/legislative requirements pertaining to working with glass</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Glazing
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## AURVTK2001 Use and maintain vehicle body repair hand tools

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to select, use and maintain hand tools in an automotive body repair workplace.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the use, service and maintenance of vehicle body repair hand tools and may include the use of hand tools to repair damage vehicle panels</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>This unit should not be selected if the hand tool is powered in any way.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select and prepare hand tools	<p>1.1. <b><i>Vehicle body repair hand tools</i></b> are selected to meet <b><i>workplace requirements</i></b></p> <p>1.2. Tools are prepared for use according to manufacturer and component supplier specifications</p> <p>1.3. <b><i>Workplace Health and Safety (WHS) requirements</i></b> are identified and applied</p>
2. Correct use of hand tools	<p>2.1. Tools are used to produce outcomes according to <b><i>job requirements</i></b></p> <p>2.2. Tools are used in a safe manner to prevent injury to self and others</p> <p>2.3. Tools are used in a manner that does not cause damage to other workplace equipment</p>
3. Service and maintain hand tools	<p>3.1. Tools are checked against manufacturer and component supplier recommendation to ensure safe operation</p> <p>3.2. Service and <b><i>maintenance operations</i></b> are carried out according to industry, workplace and WHS requirements</p> <p>3.3. Tools and equipment are checked and faulty items are identified and tagged</p>
4. Store and secure hand tools	<p>4.1. Tools and equipment are checked, cleaned and stored according to workplace expectations</p> <p>4.2. Service schedule documentation is completed according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal instructions
  - communicate information related to the use of tools and equipment
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to:
  - read and follow vehicle body repair instruction
  - read and apply operating procedures
- numeracy skills to correctly interpret metric and imperial measurement systems
- planning and organising skills to:
  - identify risk factors to minimise risk to self and others
  - contribute to activities which implement and follow workplace body repair procedures
- problem-solving skills to:
  - recognise a workplace problem or a potential problem
  - refer problems outside area of responsibility to appropriate person
  - identifying tool and equipment defects
- self-management skills to:
  - locate and identify appropriate vehicle body repair tools
  - recognise own limitations and seek advice
  - follow basic workplace documentation, such as manufacturer specification, industry codes of practice and workplace procedures
- technical skills to select, use, maintain and store vehicle body repair hand tools
- technology skills to use workplace technology to assist with work practices

#### Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements related to using vehicle body repair hand tools
- hazards and control measures associated with using vehicle body repair hand tools
- application and operation of vehicle body repair hand tools
- methods of identifying faults in vehicle body repair hand tools, including common faults and defects
- maintenance and storage procedures of vehicle body repair hand tools

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select appropriate vehicle body repair hand tools
- carry out a minimum of three vehicle body service or repair tasks using body repair hand tools
- maintain and store vehicle body repair hand tools.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- follow WHS requirements
- applying environmental policy.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- panel repair toolkit
- materials used for body repair activities
- specialised panel repair hand tools
- specifications and workplace instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Vehicle body repair hand tools</i></b> may include:	<ul style="list-style-type: none"> <li>• hacksaws</li> <li>• hammers</li> <li>• dollies</li> <li>• screwdrivers</li> <li>• files</li> <li>• punches</li> <li>• specialist tooling for component removal and adjustment.</li> </ul>
<b><i>Workplace requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace reporting and recording procedures</li> <li>• safe work procedures</li> <li>• quality policies and procedures</li> <li>• sustainability, environment, equal opportunity and anti-discrimination</li> <li>• manufacturer specifications</li> <li>• work instruction</li> <li>• industry code of practice.</li> </ul>
<b><i>Workplace health and safety (WHS) requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b><i>Job requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• marking-out</li> <li>• required finish, size or shape.</li> </ul>
<b><i>Maintenance operations</i></b> may include:	<ul style="list-style-type: none"> <li>• routine maintenance to specialised tools</li> <li>• minor repairs to tools and equipment</li> <li>• performing equipment calibration</li> <li>• sharpening of hand tools</li> <li>• documenting and tagging faulty equipment.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical - Tools and Equipment

**Custom Content Section**

Not applicable.

## AURVTN1001 Remove and tag vehicle body system components

### Modification History

Release	Comment
Release 1	Replaces AURV100064A Remove and tag vehicle body system components  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to remove and tag automotive vehicle body system components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work includes light or heavy vehicles.</p> <p>Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to remove and tag vehicle body components	<ul style="list-style-type: none"><li>1.1.Nature and scope of work requirements are identified and confirmed.</li><li>1.2.Workplace health and safety (WHS) requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work.</li><li>1.3.Procedures and information, such as workshop manuals, specifications and tooling, are sourced.</li><li>1.4.Method options are analysed and those most appropriate to the circumstances are selected and prepared.</li><li>1.5.Dangers associated working with removal and tagging of vehicle body components are observed.</li></ul>
2. Remove vehicle body system components	<ul style="list-style-type: none"><li>2.1.Vehicle body components for removal are identified.</li><li>2.2.Methods for conduct of removal and tagging are implemented in accordance with manufacturer/component supplier/component supplier specifications.</li><li>2.3.Components are removed without damage.</li><li>2.4.Inspection of components is carried out.</li><li>2.5.Report is processed action in accordance with workplace procedures.</li></ul>
3. Tag vehicle body components	<ul style="list-style-type: none"><li>3.1.Tagging procedures are identified.</li><li>3.2.Resource requirements for tagging are identified and support equipment is identified and prepared.</li><li>3.3.Components are tagged without damage.</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removing and tagging vehicle body components, including use of measuring equipment, use of communication devices and reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- vehicle body terminology
- function of each component
- relationship of body components to each other
- application of body components
- removal procedures
- tagging procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- quality procedures
- organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, removing and tagging a range of components by their title and application
- conducting removal and tagging without damage to components or tooling and equipment.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to removing and tagging vehicle body components
  - equipment, hand and power tooling appropriate to removing and tagging vehicle body components
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods include:

- tagging by title and application

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering applicable acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling and hand-held power tooling</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• tags and cleaning materials</li></ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"><li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li></ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and industry/workplace codes of practice</li><li>• material safety data sheets (MSDS)</li><li>• Australian Design Rules.</li><li>• safe work procedures related to removing and tagging vehicle body components</li><li>• organisation work specifications and requirements</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Body
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## AURVTN2002 Carry out panel repairs

### Modification History

Release	Comment
Release 1	Replaces AURV225908A Carry out panel repairs Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to carry out panel repairs to pre-paint condition. Repairs of body panels in this unit are limited to small repairs to accident damage, including dents.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, completion of panel repairs, application of fillers, application of protective coatings, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including quality, material, equipment and quantities.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including breathing protection, personal protection needs, are observed throughout the work.</p> <p>1.4. Material for application is selected and inspected for quality.</p> <p>1.5. Hand and power tooling are identified and checked for safe use.</p> <p>1.6. Products are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing job.</p>
2. Carry out panel repairs	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought where required.</p> <p>2.4. Repairs are carried out to pre-paint condition.</p> <p>2.5. Repair activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Carry out repairs using body fillers	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>3.3. Repairs are carried out to pre-paint condition.</p> <p>3.4. Repair activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and Maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to body repairs and work orders, plans and safety procedures for panel repairs
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work
- use workplace technology related to completing small repairs to panels, including use of specialist tooling, measuring equipment, use of communication devices and reporting/ documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types of body fillers and applications
- types of adhesives
- types of abrasives
- equipment maintenance procedures
- basic body filler repair procedure
- basic panel beating
- workplace guidelines regarding tolerance levels
- procedures for reporting faults and material defects
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- reading and interpreting job sheets and filler material safety data sheets to prepare for work
- identifying and selecting material used in the work process
- identifying, setting up, operating and maintaining panel repair equipment and procedures to complete the following:
  - small panel repairs
  - application of fillers
  - application of protective coatings.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to completing small repairs to panels
  - equipment, hand and power tooling appropriate to completing small repairs to panels
  - activities covering mandatory task requirements
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Repairs**

Repairs of body panels in this unit are limited to small repairs to accident damage, including dents

<b>RANGE STATEMENT</b>	
<b>Repair methods</b>	<p>Repair methods are to include:</p> <ul style="list-style-type: none"> <li>• panel and trim removal</li> <li>• heating, welding, filling and finishing</li> <li>• preparation of panels to pre-paint condition</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering applicable Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand and power tooling</li> <li>• vehicle protection</li> <li>• templates</li> <li>• welding and heating equipment</li> <li>• specialist tooling and lifting equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• fillers, adhesives, abrasives, primers and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to completing small repairs to panels</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• workplace specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2003 Carry out pre-repair vehicle body operations

### Modification History

Release	Comment
Release 1	<p>Replaces AURV226108A Carry out pre-repair operations (vehicle body)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to clean components by mechanical or chemical means and remove components in preparation for repair and/or storage.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, cleaning of components, removal, tagging and storage of components, and completion of work finalisation processes, including clean-up and documentation</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.5. Procedures are determined to minimise waste material.</p> <p>1.6. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Clean components prior to repairs and/or storage	<p>2.1. Cleaning agents are used according to cleaning agent manufacturer/component supplier instructions.</p> <p>2.2. Components of vehicle are cleaned to facilitate inspection, assessment, replacement, repair and/or storage.</p> <p>2.3. Cleaning of components is achieved without causing damage to component or system.</p> <p>2.4. Cleaning activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>2.5. Used cleaning agents and waste material are safely disposed of according to statutory and enterprise requirements.</p>
3. Remove, tag and store components	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Components are removed, tagged and stored in accordance with manufacturer/component supplier specifications and enterprise procedures, to prevent injury to self and others or damage to components.</p> <p>3.3. Components are removed, tagged and stored without causing damage to component or system.</p> <p>3.4. Removal and storage activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>3.5. Report on additional parts required to complete repair (not listed on quotation) is completed in</p>

ELEMENT	PERFORMANCE CRITERIA
	accordance with enterprise policy.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for removing, cleaning and storing vehicle units and components
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work
- use workplace technology related to pre-repair operations, including use of measuring equipment, use of communication devices and reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- use and handling of cleaning agents
- technical information
- removal and storage procedures
- component tagging methods
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- applying vehicle protection methods
- removing, cleaning, tagging and storing of a range of component parts
- completing workplace records.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to pre-repair operations
  - equipment, hand and power tooling appropriate to pre-repair operations
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it

**EVIDENCE GUIDE**

	<p>must also reinforce integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Cleaning and removal

Cleaning and removal may include:

- vehicle underbody, vehicle paint-work, glass, bright-work, plastics, rubber engine components, trim brake system components, suspension and final drive components
- wiring looms and vehicle electrics (special attention should be paid to safe disconnection of electrical components and their storage)

#### Methods

Methods may include:

- dismantling
- manual washing, machine assisted washing, use of protective coverings

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety,

<b>RANGE STATEMENT</b>	
	<p>machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policy and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering applicable Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling and equipment, vehicle protection, power tooling, jacks, stands, lifting equipment, special equipment (pressure washers, steam cleaners and spray equipment), storage tabs and racks</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• cleaning agents/sprays (dew axing, detergents, degreasers and special purpose agents)</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and</li> </ul>

RANGE STATEMENT	
	paggers
Information/documents	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS) and diagrams or sketches</li><li>• safe work procedures related to pre-repair operations</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Body
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## AURVTN2004 Remove, replace and realign bolt-on panels, sections and fittings

### Modification History

Release	Comment
Release 1	<p>Replaces AURV226864A Remove, replace and realign bolt-on panels, sections and fittings</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to remove and replace bolt-on vehicle body panels, body sections, and fittings.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, removal, replacement and realignment of bolt-on panels, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including dust and fume collection, breathing apparatus and eye and ear personal protection needs, are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing job.</p>
2. Remove bolt-on body panels, panel sections and ancillary fittings	<p>2.1. Information is accessed and interpreted from manufacturer/ \component supplier specifications.</p> <p>2.2. Removal of body panels, panel sections and ancillary fittings is completed without causing damage to component or system.</p> <p>2.3. Where there is a potential disturbance to electrical, mechanical, electronic or other systems, assistance is sought, if required.</p> <p>2.4. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>2.5. Removed parts are tagged and stored to workplace requirements.</p>
3. Replace and realign bolt-on body panels, panel sections and ancillary fittings	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Replacement components and ancillary fittings meet specifications for dimensions, material and functional capability.</p> <p>3.3. Components and ancillary fittings are replaced and realigned using approved methods, material and equipment.</p> <p>3.4. Sealant is selected and applied according to product manufacturer/component supplier specification for type, method of application and thickness.</p> <p>3.5. Where there has been a disturbance to electrical,</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>mechanical, electronic or other systems, assistance is sought, if required.</p> <p>3.6.Replacement and realignment of vehicle body panels, panel sections and ancillary fittings are completed without causing damage to component or system.</p> <p>3.7.Replacement and realignment activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1.Material that can be reused is collected and stored.</p> <p>4.2.Waste and scrap is removed following workplace and environmental procedure.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for removing, replacing and aligning bolt-on vehicle body panels, panel sections and ancillary fittings
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of the worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removal, replacement and realignment of bolt-on panels and fittings, including use of measuring equipment, use of communication devices and reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- protection procedures for electrical/electronic systems and equipment
- material handling and storage/material safety data sheets (MSDS)
- use of tooling and equipment
- manual handling techniques
- sealant selection and application
- removal, replacement and alignment procedures for bolt-on body panels sections and fittings
- removal, replacement and realignment procedures for bolt-on ancillaries
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing removal, replacement and realigning operations , at a minimum, to cover:
  - a full front-end, including radiator support and skirt hardware
  - a full door assembly
  - an interior hood lining (or equivalent)
  - tagging and storing parts
  - completing workplace records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the removal, replacement and realignment of bolt-on panels, sections and fittings
  - equipment, hand and power tooling appropriate to the removal, replacement and realignment of bolt-on panels and fittings
  - activities covering mandatory task requirements
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### **Bolt-on panels, sections and fittings**

Bolt-on panels, sections and fittings are interior and exterior components, including:

- guards, doors, bonnets, boot covers, bumper bars, lamps/lights, door trims, seats and door hardware

#### **Work methods**

Work methods are to include:

- removal and replacement/refitting
- measuring and alignment
- headlight aiming
- tagging and storing of parts

Work methods may include heating

#### **WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### **Personal protective equipment**

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### **Safe operating procedures**

Safe operating procedures are to include, but are not limited to:

- conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety,

<b>RANGE STATEMENT</b>	
	<p>machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering applicable Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling, power tooling, and equipment, oxy heating equipment, templates and lifting equipment and sealing equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• bolts, spare parts, adhesives and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>

**RANGE STATEMENT****Information/documents**

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, MSDS, diagrams or sketches
- safe work procedures related to removal, replacement and realignment of bolt-on panels and fittings
- regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian standards

**Unit Sector(s)****Unit sector**

Vehicle body

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Body

## AURVTN2005 Remove and fit protector mouldings, transfers and decals

### Modification History

Release	Comment
Release 1	<p>Replaces AURV226965A Remove and replace/fit protector mouldings, transfers and decals</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to remove and replace/fit protector mouldings, transfers and decals.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, removal, replacement and refitting of protector mouldings, transfers and decals, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for the work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove protector mouldings, transfers and decals	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Work is completed without causing damage to component, system or protector mouldings, transfers and decals.</p> <p>2.3. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Prepare for replacement/ fitting of protector mouldings, transfers and decals	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Protector mouldings, transfers and decals to be fitted are within specifications for dimensions, material and functional capability.</p> <p>3.3. Adhesives are selected according to the product manufacturer/component supplier specification for type, method, application and thickness.</p> <p>3.4. Work is completed without causing damage to component, system or protector mouldings or transfers and decals.</p> <p>3.5. Reusable moulds, decals and attachment clips/components are inspected and cleaned in preparation for refitting.</p>
4. Replace/fit protector mouldings, transfers and decals	<p>4.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>4.2. Protector mouldings, transfers and decals are replaced and fitted using approved methods, material</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>and equipment.</p> <p>4.3. Adhesives are applied according to the product manufacturer/component supplier specifications for type, method, application and thickness.</p> <p>4.4. Work is completed without causing damage to component, system or protector mouldings, transfers and decals.</p> <p>4.5. Replacement/refitting activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored</p> <p>5.2. Waste and scrap is removed following workplace and environmental procedures.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for removing and replacing/fitting protector mouldings, transfers and decals
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removal and replacement/ refitting of protector mouldings, transfers and decals, including use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types of mouldings, transfers and decals
- methods for fitting mouldings, transfers and decals
- fastening methods (adhesives and mechanical methods)
- use of tooling and equipment
- removal procedures
- replacement/fitting procedures and preparation
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing removal and replacement operations covering a minimum of three components, including:
  - a double-sided tape moulding, and
  - an anti-scruff or door frame tape
- replacing/refitting protector mouldings, transfers and decals.

##### Context of, and specific resources for assessment

- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the removal and replacement/fitting of protector mouldings, transfers and decals
  - equipment, hand and power tooling appropriate to the removal and replacement/fitting of protector mouldings, transfers and decals
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related

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	<p>conditions and require evidence of process.</p> <ul style="list-style-type: none"> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Specific requirements</b>	<p>Specific requirements are to:</p> <ul style="list-style-type: none"> <li>• remove, replace/fit protector mouldings, transfers and decals, including door frame decals and anti-scuff protectors</li> </ul>
<b>Methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>• adhesive bonding and mechanical fastening</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of</li> </ul>

<b>RANGE STATEMENT</b>	
	practice
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling, adhesive equipment, measuring equipment and specialist tooling for removal</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• adhesives and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the removal and replacement/refitting of protector mouldings, transfers and decals</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2006 Remove and replace mechanical units and assemblies

### Modification History

Release	Comment
Release 1	<p>Replaces AURV227064A Remove and replace mechanical units/assemblies</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to remove and replace units/assemblies to facilitate body repair activities.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Assistance from licensed persons must be sought in relation to air conditioning and LPG/NGV system/components and in the recommissioning of systems.</p> <p>The unit includes identification and confirmation of work requirements, preparation for work, removal, replacement of mechanical units/assemblies, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including methods, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Materials for the work are selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove mechanical units/assemblies	<p>2.1. Mechanical units/assemblies are removed using approved methods, tooling and equipment.</p> <p>2.2. Assistance from licensed persons is sought in relation to air conditioning and LPG/NGV system/components removal.</p> <p>2.3. Removal is completed without causing damage to component or system.</p> <p>2.4. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Replace mechanical units/assemblies	<p>3.1. Mechanical units/assemblies are replaced using approved methods, tooling and equipment.</p> <p>3.2. Assistance from licensed persons must be sought in relation to the recommissioning of air conditioning and LPG/NGV system/components.</p> <p>3.3. Replacement is completed without causing damage to component or system.</p> <p>3.4. Replacement activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and workplace procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for removing and replacing mechanical units/assemblies
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal and replacement of mechanical units/assemblies, including the use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types, characteristics, functions and engineering specifications of mechanical units/assemblies
- types and layout of service/repair manuals (hard copy and electronic)
- removal and replacement procedures for mechanical units/assemblies
- use of tooling and equipment
- manual handling techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- removing and replacing a minimum of two mechanical units/assemblies to workplace and manufacturer/component supplier requirements
- completing workplace records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the removal and replacement of mechanical units/assemblies
  - equipment, hand and power tooling appropriate to the removal and replacement of mechanical units/assemblies
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

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- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Units/assemblies

Units/assemblies may include:

- suspension, final drives, engines and others related to the vehicle types.

#### Methods

Methods are to include:

- non-technical inspection, pre-cleaning, isolation of assembly, removal/replacement and refitting of assemblies

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to

<b>RANGE STATEMENT</b>	
	<p>include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling, jacking, support and lifting equipment and special equipment for removal and replacement</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts, lubricants, fluids and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications,</li> </ul>

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	<p>work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</p> <ul style="list-style-type: none"><li>• safe work procedures related to the removal and replacement of mechanical units/assemblies</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2007 Remove salvageable components

### Modification History

Release	Comment
Release 1	Replaces AURV228662A Remove salvageable components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to inspect and remove salvageable components from the vehicle and present for sale.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, inspection, removal and cleaning of salvageable components, preparation of components for sale, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets, removal procedures and manufacturer/component supplier specifications.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Components to be removed are identified.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</p> <p>1.6. Procedures are determined to minimise waste materials/ components.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove salvageable components, clean and present for sale	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Salvageable components are removed from vehicle according to enterprise/manufacturer/component supplier procedures.</p> <p>2.3. Components are cleaned and prepared for sale.</p> <p>2.4. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedure.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for removing components, cleaning and presenting for sale
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete removal of components required for the work
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to removing salvageable components from vehicles, including the use of specialist tooling and equipment and communication devices and the reporting/documenting of results
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#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- vehicle safety requirements
- types and layout of service/repair manuals (hard copy and electronic)
- industry codes of practice removal methods
- inspection procedures
- sales preparation procedures
- cleaning methods, material and equipment
- manual handling methods
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- removing and cleaning of a range of components without causing damage or injury to tooling, equipment and persons
- preparing the components for sale.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to removing salvageable components from vehicles
  - equipment, hand and power tooling appropriate to removing salvageable components from vehicles
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include:

- inspection of vehicle components
- deciding on salvageable items
- removal of salvageable items
- cleaning and presentation of salvageable items

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities</li> </ul>

<b>RANGE STATEMENT</b>	
	administering Acts, regulations and codes of practice
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>hand tooling, power tooling, pullers, extractors, levers, porta powers, press, jacks, stands, oxy acetylene equipment, angle grinders, steam cleaners, detergent cleaners (including high-pressure units), parts washers and chemical baths</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>lubricants, fluids and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>safe work procedures related to removing salvageable components from vehicles</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> <li>instructions issued by authorised enterprise or external persons</li> <li>Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2008 Clean vehicle body and door cavities

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231786AA Wash/clean vehicle body and door cavities</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to wash vehicle body exterior and clean door jambs, boot and bonnet surrounds and inner sill panels.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, washing/cleaning of vehicle body and door cavities, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine work requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Wash/clean vehicle body exterior	<p>2.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>2.2. Cleaning and protection agents are selected and used according to vehicle finish type, workplace methods and product manufacturer/component supplier recommended applications.</p> <p>2.3. Vehicle body exterior is washed and cleaned according to workplace/customer and product manufacturer/component supplier prescribed methods and procedures.</p> <p>2.4. Washing/cleaning is completed without causing damage to component or system.</p> <p>2.5. Vehicle body exterior is washed and cleaned according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/ policies.</p> <p>2.6. Cleaning and protection agents are stored according to manufacturer/component supplier recommendations and regulatory requirements.</p>
3. Wash/clean door jambs, boot and bonnet surrounds and inner sill panels	<p>3.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>3.2. Cleaning/protection agents are selected and used according to vehicle finish type, workplace methods and product manufacturer/component supplier recommended applications.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3.Vehicle body door/boot cavities are washed and cleaned according to workplace/customer and product manufacturer/component supplier prescribed methods and procedures.</p> <p>3.4.Washing/cleaning is completed without causing damage to component or system.</p> <p>3.5.Vehicle door jambs, boot and bonnet surrounds and inner sills are washed and cleaned according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>3.6.Cleaning/protection agents are stored according to manufacturer/component supplier recommendations and regulatory requirements.</p>
4. Clean up work area and maintain equipment	<p>4.1.Material that can be reused is collected and stored.</p> <p>4.2.Waste material is removed following workplace and environmental procedure.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for washing a vehicle
- identifying safety precautions
- identifying recommended washing and body protection agents applications and procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- reading and interpreting product labels and directions
- listening and following verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work, including measuring and mixing cleaning and protection fluids
- use workplace technology related to the washing/cleaning of vehicle bodies, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental requirements for storage, handling and disposal of substances
- material safety data sheets
- cleaning/body protection agents and their recommended applications
- washing and cleaning procedures for vehicle body exterior, door jambs, boot and bonnet surrounds and inner sill panels
- work organisation and planning processes

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- selecting and using appropriate material and equipment
- washing and cleaning a range of vehicle body exteriors, door jambs, boot and bonnet surrounds and inner sill panels.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the washing/cleaning of vehicle bodies
  - equipment, hand and power tooling appropriate to the washing/cleaning of vehicle bodies
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

**EVIDENCE GUIDE**

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Vehicle body and door cavities

Vehicle body and door cavities are to include:

- body exterior
- door jambs
- boot and bonnet surrounds
- inner sill panels

#### Methods

Methods are to include:

- manual or machine assisted washing

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

<b>RANGE STATEMENT</b>	
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• tooling and equipment to clean body exterior and door/boot cavities, including pressure cleaning equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• cleaning and surface protection agents</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications,</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li><li>• safe work procedures related to the washing/cleaning of vehicle bodies</li><li>• regulatory/legislative requirements pertaining to automotive vehicle cleaning</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2009 Clean vehicle engine and engine compartment

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231786BA Wash/clean vehicle engine and engine compartment</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to wash/clean vehicle engine, engine compartment and components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, washing/cleaning and drying of vehicle engine, engine compartment and components, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine work requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Wash/clean engine and components	<p>2.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>2.2. Cleaning/protection agents are selected and used according to workplace methods, engine component/system material type and product manufacturer/component supplier recommended applications.</p> <p>2.3. Engine and components are washed and cleaned according to workplace/customer and product manufacturer/ component supplier prescribed methods and procedures.</p> <p>2.4. Washing/cleaning is completed without causing damage to component or system.</p> <p>2.5. Engine and components are washed and cleaned according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/ policies.</p> <p>2.6. Cleaning/protection agents are stored according to manufacturer/component supplier recommendations and regulatory requirement.</p>
3. Wash/clean engine compartment and components	<p>3.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>3.2. Cleaning/protection agents are selected and used according to workplace methods, engine component/system material type and product</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>manufacturer/component supplier recommended applications.</p> <p>3.3.Engine compartment and components are washed and cleaned according to workplace/customer and product manufacturer/component supplier prescribed methods and procedures.</p> <p>3.4.Washing/cleaning is completed without causing damage to component or system.</p> <p>3.5.Engine compartment and components are washed and cleaned according to industry standards/regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>3.6.Cleaning/protection agents are stored according to manufacturer/component supplier recommendations and regulatory requirements.</p>
4. Dry engine, compartment and components	<p>4.1.Drying processes and equipment are selected and used according to workplace methods and customer requirements.</p> <p>4.2.Engine, compartment and components are dried according to workplace/customer and product manufacturer/ component supplier/system prescribed methods and procedures.</p> <p>4.3.Engine, compartment and components are dried according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/ policies.</p> <p>4.4.Drying is completed without causing damage to component or system.</p> <p>4.5.Engine and components/systems are inspected and tested to ensure normal operation after the washing and drying process.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste material is removed following workplace and environmental procedure.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications</p>

ELEMENT	PERFORMANCE CRITERIA
	and worksite procedures. 5.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for washing a vehicle engine, compartment and components
- identifying safety precautions
- identifying recommended washing and engine/compartment/ component protection agents, applications and procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- reading and interpreting product labels/directions
- listening and following verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work, including measuring and mixing cleaning/protection fluids
- use workplace technology related to the washing/cleaning of engines and engine compartments, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental requirements for storage, handling and disposal of substances
- material safety data sheets
- electrical/electronic system/component protection methods
- air intake and fuel component protection methods
- cleaning/protection agents and their recommended applications
- washing/cleaning procedures for engine, compartment and components

**REQUIRED SKILLS AND KNOWLEDGE**

- drying procedures for engine, engine compartment and components
- engine and system/component inspection and test procedures prior to hand over
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- observing environment protection requirements
- a range of engine cleaning tasks
- selecting and using materials and equipment
- protecting electrical/electronic components
- protecting air intake and fuel components
- washing/cleaning engine, engine compartment and components.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the washing/cleaning of engine and engine compartment
  - equipment, hand and power tooling appropriate to the washing/cleaning of engines and engine compartments
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- manual or machine assisted washing
- engine and components washing
- engine compartment and components washing
- engine and component drying

#### Critical precautions

Critical precautions include:

- adequate protection of electrical and electronic components, air induction inlets and fuel components during the washing and drying process

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and

<b>RANGE STATEMENT</b>	
	mechanical lifting and shifting, working in proximity to others and worksite visitors
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• pressure cleaning equipment</li> <li>• drying equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• cleaning and surface protection agents</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions,</li> </ul>

**RANGE STATEMENT**

	<p>signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</p> <ul style="list-style-type: none"><li>• safe work procedures related to the washing/cleaning of engines and engine compartments</li><li>• regulatory/legislative requirements pertaining to the cleaning of vehicles</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2010 Clean vehicle underbody

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231786CA Wash/clean vehicle underbody</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to wash/clean vehicle underbody, units and components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, washing, cleaning and drying of the vehicle underbody, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine work requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Wash/clean vehicle underbody, units and system components	<p>2.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>2.2. Cleaning agents are selected and used according to workplace methods, vehicle underbody, unit and component material type and product manufacturer/component supplier recommended applications.</p> <p>2.3. Vehicle underbody, units and system components are washed and cleaned according to workplace/customer and product manufacturer/component supplier prescribed methods and procedures.</p> <p>2.4. Washing/cleaning is completed without causing damage to component or system.</p> <p>2.5. Vehicle underbody, units and system components are washed and cleaned according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>2.6. Cleaning agents are stored according to manufacturer/component supplier recommendations and regulatory requirement.</p>
3. Dry vehicle underbody, units and system components	<p>3.1. Drying processes and equipment are selected and used according to workplace methods and customer requirements.</p> <p>3.2. Vehicle underbody, units and system components are dried according to workplace/customer and product manufacturer/component supplier/system prescribed methods and procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3.Drying is completed without causing damage to component or system.</p> <p>3.4.Vehicle underbody, units and system components are dried according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/ policies.</p> <p>3.5.Vehicle units and system components are inspected and tested to ensure normal operation after the washing and drying process.</p>
4. Clean up work area and maintain equipment	<p>4.1.Material that can be reused is collected and stored.</p> <p>4.2.Waste material is removed following workplace and environmental procedure.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for washing a vehicle underbody, units and system components
- identifying safety precautions
- identifying recommended washing agents, applications and procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- reading and interpreting product labels/directions
- listening and following verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work, including measuring and mixing cleaning fluids
- use workplace technology related to the washing/cleaning of vehicle underbodies, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental requirements for storage, handling and disposal of substances
- material safety data sheets
- electrical/electronic system/component protection methods
- air intake and fuel component protection methods
- cleaning agents and their recommended applications
- washing/cleaning procedures for vehicle underbody, units and system components
- drying procedures for vehicle underbody, unit and system components

**REQUIRED SKILLS AND KNOWLEDGE**

- unit and system/component inspection and test procedures prior to hand-over
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- range of vehicle underbody washing tasks:
  - protecting electrical/electronic component
  - protecting air intake and fuel component
  - selecting and using material and equipment
  - washing/cleaning vehicle underbody, units and system components
- observing environment protection requirements.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the washing/cleaning of vehicle underbodies
  - equipment, hand and power tooling appropriate to the washing/cleaning of vehicle underbodies
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.

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- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- manual or machine assisted washing
- vehicle underbody washing
- vehicle units and system component washing
- vehicle unit and system component drying

#### Critical precautions

Critical precautions include:

- adequate protection of electrical, electronic and fuel components, and air induction inlets during the washing and drying process

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in

<b>RANGE STATEMENT</b>	
	proximity to others and worksite visitors
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian Standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• pressure cleaning equipment\</li> <li>• drying equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• cleaning and surface protection agents</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications,</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li><li>• safe work procedures related to the washing/cleaning of vehicle underbodies</li><li>• regulatory/legislative requirements pertaining to the cleaning of vehicles</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2011 Remove and install rear vision mirrors

### Modification History

Release	Comment
Release 1	Replaces AURV233163A Remove and install rear vision mirrors Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to remove and install/refit rear vision mirrors when attachment is to motor vehicle windscreens.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, removal and installation of rear vision mirrors, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for replacement is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove rear vision mirrors	<p>2.1. Mirrors are removed using approved methods, tooling and equipment.</p> <p>2.2. Removal is completed without causing damage to component or system.</p> <p>2.3. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Install rear vision mirrors	<p>3.1. Rear vision mirrors are installed using approved methods, material, tooling and equipment.</p> <p>3.2. Installation is completed without causing damage to component or system.</p> <p>3.3. Installation activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap are removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	4.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for removing and installing windscreen located rear vision mirrors
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the removal and installation of rear vision mirrors, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- material safety data sheets
- use of tooling and equipment
- types of materials and their application
- removal and installation procedures for windscreen located rear vision mirrors
- roadworthy regulations relating to rear vision mirrors
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- removing and installing a range of rear vision mirrors.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the removal and installation of rear vision mirrors
  - equipment, hand and power tooling appropriate to the removal and installation of rear vision mirrors
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the automotive industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related

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	<p>conditions and require evidence of process.</p> <ul style="list-style-type: none"><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- visual, mechanical and physical examinations
- removal and installation/refitting of mirrors

#### WHS requirements

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling and special equipment for removal and installation/refitting</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• adhesives and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the removal and installation of rear vision mirrors</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2030 Service air compressors and air lines

### Modification History

Release	Comment
Release 1	Replaces AURT222170A Service air compressors and air lines Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers competence to carry out air compressor, pressure regulator and air line servicing appropriate to operation of air equipment and spray guns within the body repair sector.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, servicing of air compressors, servicing of air lines and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involves air compressor regulator, water trap and lines for use of spray painting equipment associated with the vehicle body repair industry.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. <b>Prepare for work</b>	1.1. Work instructions are used to determine job requirements, including method and material type 1.2. Job specifications are read and interpreted 1.3. WHS requirements, including personal protection needs, are observed throughout the work 1.4. Materials are selected and inspected for quality 1.5. Hand, power tooling and safety equipment are identified and checked for safe use 1.6. Procedures are determined to minimise waste material 1.7. Procedures are identified for maximising energy efficiency while completing job
2. <b>Service air compressor</b>	2.1. Information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Service is carried out using approved methods and equipment, according to specifications relative to the plant/system 2.3. Service operations are completed within established industry guidelines 2.4. Air compressor is serviced without causing damage to component or system 2.5. Workplace documentation is completed and dealt with relevant to service outcomes 2.6. Servicing activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies
3. <b>Service pressure regulators and air lines</b>	3.1. Information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Service is carried out using approved methods and equipment, according to specifications relative to the plant/system 3.3. Service operations are completed within established industry guidelines 3.4. Pressure regulators and air lines are serviced without causing damage to component or system 3.5. Servicing activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies
4. <b>Clean up work area and maintain</b>	4.1. Material that can be reused is collected and stored

ELEMENT	PERFORMANCE CRITERIA
<b>equipment</b>	<p>4.2.Waste and scrap is removed following workplace procedure</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures</p> <p>4.6.Tooling is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for servicing air compressors, pressure regulators and air lines
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to servicing of air compressors and air lines, including use of specialist tooling, measuring equipment, use of communication devices and reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types of air compressors and principles of operation
- construction and operation of air compressors, air lines and regulators
- plant safety requirements and inspection procedures
- service procedures/filters/demisting air
- lubricants and/or fluids
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- selecting and using relevant tooling and equipment
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- servicing pressure regulators and air lines to workplace and manufacturer/component supplier requirements
- completing workplace/equipment documentation

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to servicing of air compressors and air lines
- equipment, hand and power tooling appropriate to servicing of air compressors and air lines
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy endorsed assessment guidelines of

**EVIDENCE GUIDE**

	<p>the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce integration of key competencies</p> <p>Assessment may be applied under project-related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Servicing**

Servicing to include fluids, filters, adjustments and operational testing, visual inspections and records

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering applicable acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for removal/adjustment, testing equipment, greasing

<b>RANGE STATEMENT</b>	
	equipment, air operated equipment and measuring equipment
<b>Materials</b>	Materials may include engine oils, gear oils, moving parts lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to servicing of air compressors and air lines</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle Body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Body
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## AURVTN2033 Service, repair and replace air compressors and components

### Modification History

Release	Comment
Release 1	<p>Replaces AURT222171A Service, repair and replace air compressors/components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the service, repair and replacement of air compressor and associated components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, servicing and repair of compressors and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work involved includes workshop air supply air compressor, drill rig or mining mobile compressor. It does not include air brake compressor on heavy highway vehicles - see air brakes.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1. Prepare to test air compressors/components</b>	1.1. Nature and scope of work requirements are identified and confirmed 1.2. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or operating pressures for testing air compressors/components are sourced and support equipment is identified and prepared 1.6. Warnings in relation to working with compressed air are observed
<b>2. Test compressor systems and analyse results</b>	2.1. Methods for the system test are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.3. Results are documented with evidence and supporting information and recommendation(s) made 2.4. Report is forwarded to persons for action in accordance with workplace procedures
<b>3. Prepare to service, repair and replace compressors and components</b>	3.1. WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2. Procedures and information required are identified and sourced 3.3. Technical and tool requirements for service, repair or replacement are identified and support equipment is identified and prepared
<b>4. Carry out service, repair and replacement</b>	4.1. Methods for the service, repair and replacement are implemented in accordance with workplace procedures and manufacturer/component supplier specifications

ELEMENT	PERFORMANCE CRITERIA
	4.2.Adjustments made during the service, repair or replacement are in accordance with manufacturer/ component supplier specifications
5. <b>Prepare vehicle for use or storage</b>	5.1.Service, repair or replacement schedule documentation is completed 5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 5.3.Final inspection is made to ensure work is to workplace expectations 5.4.Vehicle is cleaned for use or storage to workplace expectations 5.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing, repair and replacement of air compressor systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with compressor equipment
- identification of application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- air compressor system testing procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- service, repair and replacement procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting test results
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications
- application of full repair sequence as per the Range Statement to an air compressor relative to the qualification being sought
- completing service, repair or replacement of air compressor and associated components within workplace timeframes
- vehicle is presented to customer in compliance with workplace requirements

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and repair of air compressor systems
- equipment, hand and power tooling appropriate to the

<b>EVIDENCE GUIDE</b>	
	<p>service and repair of air compressor systems</p> <ul style="list-style-type: none"> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Servicing</b>	Servicing is to include fluids, filters, adjustments and operational testing, visual inspections and documents
<b>Repair methods</b>	Repair methods and sequence are to include isolation of fault(s), dismantling, inspection and evaluation, replacement of components parts and assembly and completion of operational tests and documents
<b>Faults</b>	Faults to include low air delivery
<b>Variables</b>	Variables include: <ul style="list-style-type: none"><li>• piston</li><li>• vane</li><li>• screw</li><li>• diaphragm</li><li>• two stage compressors</li></ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid

<b>RANGE STATEMENT</b>	
	requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges and pressure testing devices
<b>Materials</b>	Materials may include spare parts and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the servicing, repair and replacement of air compressor systems and components</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or</li> </ul>

**RANGE STATEMENT**

	external persons • Australian Standards
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle Body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN2037 Disassemble and test vehicle units and components

### Modification History

Release	Comment
Release 1	<p>Replaces AURV228617A Disassemble and test vehicle units/components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to dismantle and test removed vehicle units/components. It also involves cleaning and testing units/components for suitability for future use.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, dismantling and testing of removed vehicle units/components, cleaning and testing of units/components for suitability for future use, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets, test procedures and manufacturer/ component supplier specifications.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Units/components to be disassemble and tested are identified.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</p> <p>1.6. Procedures are determined to minimise waste material/ components.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Disassemble units/ components	<p>2.1. Component to be disassembled is identified from customer or enterprise information.</p> <p>2.2. Methods for disassembling components are determined according to enterprise policies and procedures and manuals/specifications.</p> <p>2.3. Components are disassembled and tolerances/wear checked against manufacturer/component supplier specifications.</p> <p>2.4. Decision to retain/replace/repair/adjust/service component is determined according to enterprise policies and procedures.</p>
3. Clean and test units/ components	<p>3.1. Cleaning procedure is determined from manufacturer/ component supplier specifications and in accordance with enterprise policies and procedures.</p> <p>3.2. Component is cleaned using procedures, material, tooling and equipment.</p> <p>3.3. Component is tested for operation and future use.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>identified in accordance with workplace procedures.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for disassembling and testing vehicle units/components
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete tests, measurements and assessment of unit/component serviceability required for the work
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the disassembly and testing of vehicle units/components, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- component disassembling procedures
- types and layout of service/repair manuals (hard copy and electronic)
- cleaning material procedures
- industry codes of practice
- tooling and equipment safety requirements
- component checking/testing procedures
- manual handling methods
- testing procedures and techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- following specifications to disassemble units/ components
- cleaning and testing the operation of units/components.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the disassembling and testing of vehicle units/components
  - equipment, hand and power tooling appropriate to the disassembling and testing of vehicle units/components
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry's Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- disassembling of removed units/components
- checking, repairing/replacing worn/damaged parts
- cleaning units/components
- testing assembled units/components for operation

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to

<b>RANGE STATEMENT</b>	
	<p>include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling, power tooling, testing equipment, pullers, extractors, presses, steam cleaners, detergent cleaners (including high-pressure units), chemical baths, kerosene baths, parts washers, compressors, air guns and cleaning and testing tooling, material and equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• spare parts, lubricants and fluids and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>

**RANGE STATEMENT****Information/documents**

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- safe work procedures related to the disassembling and testing of vehicle units/components
- regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian standards

**Unit Sector(s)****Unit sector**

Vehicle body

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Body

## AURVTN3012 Install vehicle sunroofs

### Modification History

Release	Comment
Release 1	Replaces AURV324431A Install vehicle sunroofs Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to install sunroofs in vehicles/craft/machines.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, fabrication of templates, marking out and cutting of panels, preparation of cut edges, installation of vehicle sunroofs and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure, mark out and fabricate template	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Suitable materials are selected and template is fabricated to shape and size.</p> <p>2.3. Fabricating, measuring and marking out activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Mark out, cut panels/trim and prepare cut edges	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Template is used to mark out areas to be cut.</p> <p>3.3. Panels/trim are cut using approved methods and equipment in accordance with specifications.</p> <p>3.4. Panels/trim are prepared in readiness for installing sunroof.</p> <p>3.5. Panels are reinforced to comply with manufacturer/ component supplier requirements, Australian Design Rules and structural requirements.</p> <p>3.6. Work is completed without causing damage to any component or system.</p> <p>3.7. Marking out, cutting and preparation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Install sunroof	<p>4.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>4.2.Sunroof is installed to specifications.</p> <p>4.3.Installation is achieved without causing damage to any component or system.</p> <p>4.4.Installed sunroof is checked for operation and leak tested.</p> <p>4.5.All installation and checking is performed according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>4.6.Workplace and equipment documentation is completed in accordance with worksite requirements.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap are removed following workplace and environmental procedures.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to installation of vehicle sunroofs, including the use of specialist tooling, measuring equipment and communication devices and the reporting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- sunroof installation procedures
- measuring procedures
- template fabrication techniques
- cutting procedures (panels and trim)
- panel reinforcing methods
- work organisation and planning processes

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- measuring, marking out and fabricating templates to specification
- preparing and installing a minimum of three sunroofs to specification
- completing workplace and equipment records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to installation of vehicle sunroofs
- equipment, hand and power tooling appropriate to installation of vehicle sunroofs
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Sunroofs</b>	Sunroofs may be in heavy vehicles and equipment, outdoor equipment, agricultural equipment and marine craft.
<b>Methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>• measuring, marking out, cutting, preparing cut edges</li> <li>• reinforcing cut panels</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>installing sunroof</li> <li>leak testing installed sunroof</li> <li>sealing, testing operation and cleaning.</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, measuring equipment, marking out equipment, cutting equipment, vehicle protection equipment, templates and welding equipment.
<b>Materials</b>	Materials may include sunroofs, spare parts, template materials, adhesives, consumables and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to installation of vehicle sunroofs</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3013 Carry out paint-less dent repairs

### Modification History

Release	Comment
Release 1	Replaces AURV325808A Carry out paint-less dent repairs Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence required to carry out paint-less dent repairs.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	The unit includes identification and confirmation of work requirement, preparation for work, repair and checking of components and completion of work finalisation processes, including clean-up and documentation.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including quality, tooling and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Hand/power tooling are identified and checked for safe use.</p> <p>1.5. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out paint-less dent repair	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Components are repaired using approved methods and equipment in accordance with industry recognised practices.</p> <p>2.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>2.4. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.5. Repairs are checked to specification and workplace/ equipment records are completed to worksite requirements.</p>
3. Clean up work area and maintain equipment	<p>3.1. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>3.2. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p> <p>3.3. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.4. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to paint-less dent repair, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types of dents and materials appropriate to paint-less dent repair
- paint-less dent repair methods and techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- completing paint-less dent repairs for a minimum of two unstretched shallow dents (minimum dimensions of 30mm x 5mm)
- completing workplace/equipment records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to paint-less dent repair
- equipment, hand and power tooling appropriate to paint-less dent repair
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Paint-less dent repairs</b>	Paint-less dent repairs are those not requiring refinishing.
<b>Paint-less dent repair methods</b>	Paint-less dent repair methods are to include pressing, beating, reforming, levering and pulling.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, templates, panel reforming tooling and equipment, personal and vehicle protection, bonding systems, lighting, specialist tooling and lifting equipment.
<b>Materials</b>	Materials may include surface preparation and

<b>RANGE STATEMENT</b>	
	cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to paint-less dent repair</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Body
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## AURVTN3014 Repair body panels by beating and split repair

### Modification History

Release	Comment
Release 1	<p>Replaces AURV326266AA Repair body panels (beating and split repair)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out metal panel beating and panel split repairs, incorporating heat shrinking, to repair body panels.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, repair and checking of body panels and completion of work finalisation processes including clean up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected appropriate to application.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out metal panel beating repairs	<p>2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought where required.</p> <p>2.4. Repairs are carried out to pre-paint condition.</p> <p>2.5. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>2.6. Repairs are checked to specification and workplace/equipment records are completed to site requirements.</p>
3. Carry out metal panel split repairs	<p>3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>3.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought where required.</p> <p>3.4. Repairs are carried out to pre-paint condition.</p> <p>3.5. Repair activities are carried out according to industry</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>3.6.Repairs are checked to specification and workplace/equipment records are completed to site requirements.</p>
4. Carry out metal heat shrinking operations	<p>4.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>4.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>4.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought where required.</p> <p>4.4. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>4.5. Repairs are checked to specification and workplace/equipment records are completed to site requirements.</p>
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>5.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier specifications, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers)
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair of body panels including use of specialist tooling, measuring equipment, use of communication devices and reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- metal material types and stress limits
- panel beating and split panel repair methods and techniques
- heat shrinking methods and techniques
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others in associated areas
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying panel beating repair procedures to industry standard
- applying split-panel repair procedures to industry standard
- applying heat shrinking procedures to industry standard
- applying vehicle protection methods
- completing workplace/equipment records.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated automotive site.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to repair of body panels
- equipment, hand and power tooling appropriate to repair of body panels
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Automotive Industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

- Methods include metal panel beating, heat shrinking and panel split repair.
- Methods should be applied under normal operating conditions.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise WHS policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and WHS, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but not limited to conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include but not be limited to regulations including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State and Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, templates, welding equipment, heat shrinking equipment, vehicle protection, special tooling and lifting equipment.
<b>Materials</b>	Materials may include welding consumables and cleaning material.

<b>RANGE STATEMENT</b>	
<b>Communications</b>	Communications are to include but not be limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repair of body panels</li><li>• regulatory/legislative requirements pertaining to Automotive industry including Australian Design Rules</li><li>• engineers design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Body
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## AURVTN3015 Repair body panels using metal finishing techniques

### Modification History

Release	Comment
Release 1	Replaces AURV326266BA Repair body panels (metal finishing) Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out metal finishing, incorporating heat shrinking, to repair body panels. This unit does not cover aluminium panels.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, repair and checking of body panels and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out metal finishing	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>2.4. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.5. Repairs are checked to specification and workplace/ equipment records are completed to worksite requirements.</p>
3. Carry out heat shrinking operations	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>3.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>3.4. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>3.5. Repairs are checked to specification and workplace/</p>

ELEMENT	PERFORMANCE CRITERIA
	equipment records are completed to worksite requirements.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to metal finishing of body panels, including the use of specialist tooling, measuring equipment and communication devices and the reporting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- material types and stress limits
- heat shrinking methods and techniques
- metal finishing methods and techniques
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- completing metal finishing panel repair covering a minimum of:
  - a panel being, a guard, quarter or door
  - with a minimum thickness of 7mm
  - having style linings and pressings; and
  - a split of 250mm minimum length
- completing workplace/equipment records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to metal finishing of body panels
- equipment, hand and power tooling appropriate to metal finishing of body panels
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Panel repair</b>	Panel repair (metal finishing) covers file finishing in metals using no fillers to repair split/tear and dents.
<b>Panels</b>	Panels are of mild steel construction.

<b>RANGE STATEMENT</b>	
<b>Repair methods</b>	Repair methods are to include panel stripping and preparation, heat shrinking, welding, hand dolly planishing and file finishing.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.

**RANGE STATEMENT****Tooling and equipment**

Tooling and equipment may include hand tooling, power tooling and equipment, templates, metal welding equipment, heat shrinking equipment, vehicle protection, specialist tooling and lifting equipment.

**Materials**

Materials may include filling materials, welding consumables and cleaning materials.

**Communications**

Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.

**Information/documents**

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to metal finishing of body parts
- regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- Australian Standards.

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3016 Repair body panels incorporating filler

### Modification History

Release	Comment
Release 1	<p>Replaces AURV326266CA Repair body panels (incorporating filler)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor change to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out body filler procedures to repair body panels.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, the repair of body panels, the checking of outcomes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out repairs using body fillers	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Protective equipment appropriate to repair activities is used.</p> <p>2.3. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>2.4. Repairs are carried out to pre-paint condition.</p> <p>2.5. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.6. Repair is checked in accordance with workplace and manufacturer/component supplier requirements.</p> <p>2.7. Workplace/equipment documentation is completed and dealt with relevant to repair outcomes.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	3.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for repairing body panels incorporating filler materials
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair of body panels, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- material types and stress limits
- types of body filler and their application
- body filler repair procedures and techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- completing body filler repair procedures for at least one vehicle panel with the following minimum repair requirements/specifications:
  - panel to incorporate style line and pressings
  - a dent of a minimum of 400mm
  - a filling requirement of a maximum depth of 3mm over 75% of the repair area
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair of body panels
- equipment, hand and power tooling appropriate to repair of body panels
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE**

	<p>Package.</p> <ul style="list-style-type: none"> <li>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>Assessment may be applied under project related conditions and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Panel repair (filler)**

Panel repair (filler) covers restoration of the panel to original shape and contour by metal straightening techniques and application of fillers.

**Defects**

Defects include split/tear and dents.

<b>RANGE STATEMENT</b>	
<b>Repair fillers</b>	Repair fillers may be two-pack polyester and polystyrene types.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, templates, welding equipment, vehicle protection, specialist tooling and lifting equipment.
<b>Materials</b>	Materials may include filling materials and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, repair quotations, signage, work schedules/plans/ specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repair of body panels</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3017 Repair body panels and thermoplastic components

### Modification History

Release	Comment
Release 1	<p>Replaces AURV326266DA air body panels/components (thermoplastic)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out repairs on interior or exterior thermoplastic panels and components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, repair of body panels, checking of outcomes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Repair plastic panel/ component	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Protective equipment appropriate to repair activities is used.</p> <p>2.3. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specifications.</p> <p>2.4. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>2.5. Repairs are carried out up to pre-paint condition.</p> <p>2.6. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.7. Repair is checked in accordance with workplace and manufacturer/component supplier requirements.</p> <p>2.8. Workplace/equipment documentation is completed and dealt with relevant to repair outcomes.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for repairing plastic body panels
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair of thermoplastic body panels/components, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- plastic material types and stress limits
- plastic panel/component repair procedures and techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying and selecting repair techniques
- completing a minimum of plastic panel repair using both bonding and welding and, including:
  - a body panel incorporating flange and contour with a split of 200mm
  - a body electrical ornament
  - an interior panel
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair of thermoplastic body panels/components
- equipment, hand and power tooling appropriate to repair of thermoplastic body panels/components
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE**

	<p>Package.</p> <ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Plastics</b>	Plastics may be rigid, semi-rigid or flexible.
<b>Thermoplastic repairs</b>	Thermoplastic repair covers splits/tears and dents.
<b>Repair methods</b>	Repair methods are to include straightening and

<b>RANGE STATEMENT</b>	
	realigning, welding, bonding and filling.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, templates, butane

<b>RANGE STATEMENT</b>	
	welder, airless welding torch, heat air supply tool, vehicle protection, specialist tooling and lifting equipment.
<b>Materials</b>	Materials may include glues, bonding agents and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, repair quotations, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repair of thermoplastic body panels/components</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3018 Repair and replace structural damage by welding

### Modification History

Release	Comment
Release 1	<p>Replaces AURV326366AB Repair and replace structural damage (welding)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out structural repairs using straightening and realigning, welded panel replacement and body panel manual measuring procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, application of structural straightening and realigning and welded panel replacement procedures and techniques, inspection and measuring of outcomes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out structural straightening and realigning procedures	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Protective equipment appropriate to repair activities is used.</p> <p>2.3. Components are straightened and realigned using approved methods and equipment in accordance with manufacturer/ component supplier specification.</p> <p>2.4. Where straightening and realigning of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>2.5. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Carry out welded panel replacement procedures	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Protective equipment appropriate to repair activities are used.</p> <p>3.3. Components are replaced using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>3.4. Where replacement of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>3.5. Replacement activities are carried out according to industry regulations/guidelines, WHS legislation, and</p>

ELEMENT	PERFORMANCE CRITERIA
	enterprise procedures/policies.
4. Carry out body panel measuring procedures	<p>4.1.Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>4.2.Components are measured using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>4.3.Measuring activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>4.4.Workplace/equipment documentation is completed and dealt with relevant to repair outcomes.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap is removed following workplace and environmental procedure.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for repairing/replacing structurally damaged components
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair and replacement of structurally damaged panels, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- hydraulic straightening and realigning procedures and techniques
- body panel measuring procedures and techniques
- panel replacement procedures and techniques
- manual handling procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection procedures
- completing hydraulic straightening and aligning procedures to manufacturer/component supplier and workplace requirements
- completing repair/replacement operations for a minimum of three different jobs, which are to include one door skin and one quarter panel
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair and replacement of structurally damaged panels
- equipment, hand and power tooling appropriate to repair and replacement of structurally damaged panels
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE**

	<p>Package.</p> <ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Structural damage**

Structural damage to rails and skirts, boot floors, chassis rails, inner wheel arches, turrets, bulkheads / fire wall, front & rear hinge pillars, combination inner and outer sill/pillar panels.

<b>RANGE STATEMENT</b>	
<b>Repair/replacement methods</b>	<p>Repair/replacement methods are to include:</p> <ul style="list-style-type: none"> <li>• welding (oxy acetylene, MIG, TIG and spot)</li> <li>• heat shrinking, panel split repair, metal finishing, body filling</li> <li>• hydraulic forming, minor sectional repair, welded panel replacement, measuring and alignment techniques.</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.</p>
<b>Environmental requirements</b>	<p>Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.</p>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.</p>

<b>RANGE STATEMENT</b>	
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, including hydraulic push-pull, templates, welding equipment (which may include arc, oxy acetylene, MIG and TIG), measuring equipment/devices (tape measures, trammel gauges, mechanical/electronic underbody and jiggling), vehicle protection, specialist tooling and equipment.
<b>Materials</b>	Materials may include welding consumables and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, repair quotations, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repair and replacement of structurally damaged panels</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3019 Repair and replace structural damage by riveting

### Modification History

Release	Comment
Release 1	<p>Replaces AURV326366BA Repair/replace structural damage (riveting)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out structural repairs using straightening and realigning, panel replacement and body panel manual measuring procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, and application of structural straightening and realign, panel replacement riveting procedures and techniques, inspection and measuring of outcomes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out structural straightening and realigning procedures	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Protective equipment appropriate to repair activities used.</p> <p>2.3. Components are straightened and realigned using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>2.4. Where straightening and realigning of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>2.5. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Carry out riveted panel replacement procedures	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Protective equipment appropriate to repair activities are used.</p> <p>3.3. Components are replaced using approved riveting methods and equipment in accordance with manufacturer/ component supplier specification.</p> <p>3.4. Where replacement of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>3.5. Replacement activities are carried out according to industry regulations/guidelines, WHS legislation, and</p>

ELEMENT	PERFORMANCE CRITERIA
	enterprise procedures/policies.
4. Carry out body panel measuring procedures	<p>4.1.Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>4.2.Components are measured using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>4.3.Measuring activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>4.4.Workplace/equipment documentation is completed and dealt with relevant to repair outcomes.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap is removed following workplace and environmental procedure.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for repairing/replacing structurally damaged components
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair and replacement of structurally damaged panels, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- hydraulic straightening and realigning procedures and techniques
- body panel measuring procedures and techniques
- riveting procedures and techniques
- assembly replacement techniques
- manual handling procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection procedures
- completing hydraulic straightening and aligning procedures to manufacturer/component supplier and workplace requirements
- completing repair/replacement operations for a minimum of three different jobs which are to include one radiator support assembly and one skirt and rail assembly
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair and replacement of structurally damaged panels
- equipment, hand and power tooling appropriate to repair and replacement of structurally damaged panels
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE**

	<p>Package.</p> <ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Structural damage**

Structural damage is to include radiator support assemblies, skirt and rail assemblies and bulkheads.

**Repair/replacement methods**

Repair/replacement methods are to include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• heat shrinking, panel split repair, metal finishing, body filling</li> <li>• hydraulic forming, minor sectional repair, welded panel replacement, measuring and alignment techniques.</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of

<b>RANGE STATEMENT</b>	
	practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, including hydraulic push/pull, templates, riveting equipment, measuring equipment/devices (tape measures, trammel gauges, mechanical/electronic underbody and jiggling), vehicle protection, specialist tooling and equipment.
<b>Materials</b>	Materials may include rivets and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, repair quotations, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair and replacement of structurally damaged assemblies</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3020 Replace major welded panels

### Modification History

Release	Comment
Release 1	Replaces AURV326367B Replace major welded panels Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out welded panel and panel section replacement.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal, replacement and alignment of welded panels and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove welded panels/panel sections	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Protective equipment appropriate to repair activities is used.</p> <p>2.3. Components are removed using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>2.4. Where removal of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>2.5. Removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Replace and align welded panel/panel sections	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Protective equipment appropriate to repair activities is used.</p> <p>3.3. Components are replaced and aligned using approved methods and equipment in accordance with manufacturer/ component supplier specifications.</p> <p>3.4. Where replacement of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>3.5. Replacements are carried out to pre-paint condition.</p> <p>3.6. Replacement and alignment activities are carried out according to industry regulations/guidelines, WHS</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>legislation, and enterprise procedures/policies.</p> <p>3.7.Workplace/equipment documentation is completed and dealt with relevant to work outcomes.</p>
4. Clean up work area and maintain equipment	<p>4.1.Material that can be reused is collected and stored.</p> <p>4.2.Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for replacing welded panels and panel sections
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to replacement of major welded panels, including the use of specialist tooling, welding systems, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- types of metal materials
- major welded panel replacement procedures and techniques
- manual handling procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing replacement of a minimum of three major panels to manufacturer/component supplier and workplace requirements, including one rail and skirt and one centre pillar and sill panel assembly
- completing panel alignment to manufacturer/component supplier and workplace requirements
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to replacement of major welded panels
- equipment, hand and power tooling appropriate to replacement of major welded panels
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Major welded panels**

Major welded panels include radiator support panels, quarter panels, beaver panels, outer sill panels, outer pillar panels, door skins and turret skins.

**Replacement methods**

Replacement methods are to include:

- welding (oxy acetylene, MIG, TIG and spot)
- heat shrinking, hydraulic forming, welded

<b>RANGE STATEMENT</b>	
	panel replacement, measuring and alignment techniques.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling,

<b>RANGE STATEMENT</b>	
	power tooling and equipment, including hydraulic push pull, heating and welding equipment which may include arc, oxy acetylene, MIG, TIG, measuring equipment and/or systems, vehicle protection, specialist tooling and equipment.
<b>Materials</b>	Materials may include welding consumables and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, repair quotations, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to replacement of major welded panels</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3021 Repair body components using lead wiping

### Modification History

Release	Comment
Release 1	Replaces AURV326466A Repair body components using lead wiping Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out lead wiping/lead filling repair methods for damaged vehicle panels.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, and reinstatement of body components by lead wiping and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Reinstall body components by lead wiping	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Lead filling materials are prepared and applied to pre-cleaned and prepared area according to industry standards.</p> <p>2.3. Repair operations are completed within established industry guidelines.</p> <p>2.4. Repairs are carried out to pre-paint condition to acceptable industry standards using physical, visual and mechanical checks.</p> <p>2.5. Reinstall body components by lead wiping without causing damage to any component or system.</p> <p>2.6. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.7. Workplace/equipment documentation is completed and dealt with relevant to work outcome.</p>
3. Clean up work area and maintain equipment	<p>3.1. Waste and scrap is removed following workplace and environmental procedure.</p> <p>3.2. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.3. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>3.4. Operator maintenance is completed in accordance</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.5.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for body repair using lead wiping
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to lead wiping repair of body components, including the use of specialist tooling, measuring equipment and communication devices and the reporting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements
- material types (metals, plastics, fibreglass, etc.)
- technical information
- filling materials, procedures and techniques
- waste product disposal procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- applying environmental procedures
- completing lead wiping operations which are, at a minimum to include repairing small dents vertically and repairing a joint with vertical and horizontal planes to manufacturer/component supplier and workplace requirements
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to lead wiping repair of body components
- equipment, hand and power tooling appropriate to lead wiping repair of body components
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE**

	<p>Package.</p> <ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Repair methods**

Repair methods are to include:

- cleaning and preparation
- applying a sander to key the metal
- tinning the metal surface
- heating and applying body solder with

<b>RANGE STATEMENT</b>	
	<p>wooden bat</p> <ul style="list-style-type: none"> <li>• filling the joint on low</li> <li>• filing off with a body file.</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power and air tooling, heating equipment and templates.
<b>Materials</b>	Materials may include lead filler, applicators and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, repair quotations, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to lead wiping repair of body components</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3022 Repair vehicle body misalignment

### Modification History

Release	Comment
Release 1	Replaces AURV326508A Repair vehicle body misalignment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit identifies the competence required to carry out vehicle measurement and to repair the identified body misalignment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, measurement and repair of identified body misalignment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</li><li>1.4. Material for repair is selected.</li><li>1.5. Equipment and tooling are identified and checked for safe and effective operation.</li><li>1.6. Procedures are determined to minimise waste material.</li><li>1.7. Procedures are identified for maximising energy efficiency while completing the job.</li></ul>
2. Perform vehicle measuring	<ul style="list-style-type: none"><li>2.1. Measurement of the vehicle is completed without causing damage to any component or system.</li><li>2.2. Equipment selected for vehicle measuring is to vehicle manufacturer/component supplier specifications.</li><li>2.3. Equipment used for vehicle measuring is prepared and adjusted in accordance with equipment manufacturer/ component supplier specification.</li><li>2.4. Vehicle is prepared and, installed/located on the equipment in accordance with equipment manufacturer/component supplier instructions.</li><li>2.5. Nature and extent of misalignment is determined using approved measuring methods.</li><li>2.6. Results of measurements of vehicle alignment are documented accurately and completely.</li><li>2.7. Measuring activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li></ul>
3. Rectify body and underframe misalignment	<ul style="list-style-type: none"><li>3.1. Equipment selected for rectification of alignment is to vehicle manufacturer/component supplier specification.</li><li>3.2. Equipment used for rectification of alignment is prepared and adjusted in accordance with equipment manufacturer/ component supplier specification.</li><li>3.3. Vehicle to be aligned is prepared and, installed/located on the alignment equipment in</li></ul>

ELEMENT	PERFORMANCE CRITERIA
	<p>accordance with equipment manufacturer/component supplier instructions.</p> <p>3.4. Hydraulic repair equipment is prepared and attached using equipment manufacturer/component supplier approved methods.</p> <p>3.5. Hydraulic repair equipment is operated using approved methods and techniques.</p> <p>3.6. Alignment of item is reinstated to manufacturer/component supplier specification and tolerances.</p> <p>3.7. Rectifying of body and underframe misalignment is completed without causing damage to any component or system.</p> <p>3.8. Reinstatement activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for vehicle body measurement and alignment repair
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to measure and repair body misalignment, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results
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#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- manufacturer/component supplier specifications
- measurement methods/techniques and procedures
- alignment methods/repair techniques and procedures
- removal and replacement procedures
- tooling and equipment, including welding and heating equipment
- manual handling techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- repairing a range of vehicle body misalignments, including measuring, welding, sectional repair and application of hydraulic repair equipment
- completing activities within workplace timeframes
- completion of workplace records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to measuring and repair of body misalignment
- equipment, hand and power tooling appropriate to measuring and repair of body misalignment
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

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	<p>underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include:

- visual, mechanical and physical examination
- measurements in conjunction with alignment equipment, including identification of under-body damage, sway, sag and/or twist
- heating, hydraulic reforming, sectional repair, including a range of joins e.g. staggered and traffic authority approved methods

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• panel beating, welding, mechanical fastening, riveting, metal cutting</li> <li>• removal and replacement of mechanical, suspension, steering transmissions, etc.</li> </ul>
<b>Component types</b>	Components types may include in situ panels, double panels, box panels, sill panels, chassis, frames, turrets, mono construction, high-stress steels and plastic body panels.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and

<b>RANGE STATEMENT</b>	
	procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, heating and welding equipment, including oxy acetylene, arc, MIG, TIG, lifting and hydraulic push/pull equipment, measuring systems/ equipment (jigging systems) and vehicle alignment bench, including a range of clamping and anchoring procedures/ methods.
<b>Materials</b>	Materials may include welding and fastening materials, repair consumables and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to measuring and repair of body misalignment</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3023 Remove and replace adhesive bonded panels and structures

### Modification History

Release	Comment
Release 1	<p>Replaces AURV326964A Remove and replace adhesive bonded panels and structures</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to replace body panels and structures with new or repaired parts, using an adhesive bonding attachment method.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal, replacement and refitting of adhesive bonded panels and structures and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for attachment is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove and replace body panels and structures	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Replacement components meet specifications for dimensions, materials and functional capability.</p> <p>2.3. Components and ancillary fittings are refitted using approved adhesive bonding methods, materials and equipment.</p> <p>2.4. Sealant is selected and applied according to the manufacturer/component supplier specification for type, method of application and thickness.</p> <p>2.5. Where there is a potential disturbance to electrical, mechanical, electronic or other systems, assistance is sought.</p> <p>2.6. Removal and replacing/refitting of body panels and structures is completed without causing damage to any component or system.</p> <p>2.7. Replacement activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.8. Workplace/equipment documentation is completed and dealt with relevant to work outcome.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for removing and replacing vehicle adhesive bonded body panels and structures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to removal and replacement of adhesive bonded panels and structures, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- protection procedures for electrical/electronic systems and equipment
- engineering structural requirements
- removal and replacement procedures for bonded body panels and structures
- sealant selection and application
- adhesive bonding techniques, materials and application
- use of tooling and equipment
- manual handling techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- protecting electrical/electronic equipment and systems
- selecting and applying replacement/refitting procedures for bonded panels and structures
- completing removal and replacement of a minimum of three bonded panels/structures, including one turret and one door skin.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to removal and replacement of adhesive bonded panels and structures
- equipment, hand and power tooling appropriate to removal and replacement of adhesive bonded panels and structures
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance together with application of underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Panels</b>	Panels may include turrets, boot floors, firewalls, skirt and rails, front and side panels, door skirts and quarter panels.
<b>Measurement</b>	Measurement includes mechanical, electronic, dedicated and non-dedicated jiggling systems.
<b>Removal and replacement</b>	Removal and replacement methods are to include

<b>RANGE STATEMENT</b>	
<b>methods</b>	adhesive bonding, resistant spot welding, clamping and cleaning.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, clamping equipment, welding equipment, curing/drying equipment, templates and lifting equipment, sealing and adhesive equipment.
<b>Materials</b>	Materials may include sealants and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to removal and replacement of adhesive bonded panels and structures</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3024 Install vehicle body component seals

### Modification History

Release	Comment
Release 1	Replaces AURV327231A Install vehicle body component seals Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to identify, fit and/or repair faulty vehicle body component seals.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and testing of seals, removal, repair and replacement of seals and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Materials for repair are selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Inspect and test vehicle body component seals for leaks	<p>2.1. Information is accessed and applied in accordance with vehicle/component manufacturer/component supplier specifications.</p> <p>2.2. Inspection and testing, including those for water and dust leaks and wind noise, follow industry accepted procedures.</p> <p>2.3. Inspection and testing procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>2.4. Inspection and testing are completed without causing damage to vehicle section, system or component.</p> <p>2.5. Activities are carried out according to industry regulations/ guidelines, WHS, legislation and enterprise procedures/ policies.</p>
3. Install, repair and/or replace vehicle body component seals	<p>3.1. Information is accessed and applied in accordance with vehicle/component manufacturer/component supplier specifications.</p> <p>3.2. Fittings, tooling and equipment are used.</p> <p>3.3. Installation, repairs and replacement procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>3.4. Work is completed without causing damage to vehicle section, system or component.</p> <p>3.5. Activities are carried out according to industry regulations/ guidelines, WHS, legislation and enterprise procedures/ policies.</p> <p>3.6. Workplace equipment documentation is completed</p>

ELEMENT	PERFORMANCE CRITERIA
	and processed to enterprise/manufacture/component supplier requirements.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for installing vehicle body component seals
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the installation of vehicle body component seals, including the use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- types of vehicle body component seals
- types of adhesives and their application
- dismantling and assembling vehicle components
- vehicle body seal securing methods and procedures
- manufacturer/component supplier/company policies
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- inspecting and testing vehicle body component seals
- installing, repairing and replacing a range of vehicle body component seals to manufacturer/component supplier and workplace requirements
- completing workplace/equipment records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the installation of vehicle body component seals
- equipment, hand and power tooling appropriate to the installation of vehicle body component seals
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Vehicle body component seals</b>	<ul style="list-style-type: none"> <li>• Vehicle body component seals are to include door and boot lid weather seals.</li> <li>• Vehicle body component seals may be on heavy vehicles, plant and agricultural equipment, marine craft, mining equipment, marine craft and aircraft.</li> </ul>
<b>Installation methods</b>	Installation methods are to include clamping, crimping and gluing.

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power/ air tooling, cleaning equipment, sealing equipment and cutting equipment.

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include adhesives, solvents, resins and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to the installation of vehicle body component seals</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Body
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## AURVTN3025 Repair corroded panels and components

### Modification History

Release	Comment
Release 1	Replaces AURV327366A Repair corroded panels and components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out the repair of vehicle body panels and components damaged by corrosion.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal of corroded panels, the repair, reforming and replacement of body panels/ components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove corroded body panels and/or structural components or sections	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Panels and/or structural components or sections are removed with out causing damage to vehicle.</p> <p>2.3. Repairable/reusable body sections are determined according to general industry repair methods.</p> <p>2.4. Where removal of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>2.5. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Carry out body component/panel repairing and reforming procedures	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Repair material is selected in accordance with the industries general repair requirements and vehicle manufacturer/component supplier specifications.</p> <p>3.3. Components are measured using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>3.4. Components, panels and/or sections are repaired using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>3.5. Components, panels and/or sections are manufactured and reformed to suit vehicle contour</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>and measurement requirements.</p> <p>3.6. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>3.7. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
<p>4. Replace body panels and structural components or sections</p>	<p>4.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>4.2. Components are replaced using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>4.3. Replaced panels/components are checked for compliance with specification.</p> <p>4.4. Where replacement of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>4.5. Replacement activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>4.6. Workplace/equipment documentation is completed and processed to enterprise/manufacturer/component supplier requirements.</p>
<p>5. Clean up work area and maintain equipment</p>	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for repairing body corrosion damage
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair of corroded panels and components, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- body panel/component measuring procedures
- corrosion repair methods and procedures, including panel/panel section replacement and panel/component manufacture and forming
- welding techniques
- manual handling procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection procedures
- completing body corrosion repair, including panel and section replacement and panel/component repairing and forming
- completing body panel/component manual measuring
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair of corroded panels and components
- equipment, hand and power tooling appropriate to repair of corroded panels and components
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and

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	<p>accuracy of performance together with application of underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Corrosion repairs**

Types of corrosion repairs include:

- radiator support panels and sections
- front skirt section
- door skins
- sill panels and section
- beaver panel replacement.

<b>RANGE STATEMENT</b>	
<b>Panel repair methods</b>	Panel repair methods are to include grinding, thermal heating and cutting, welding (oxy acetylene, MIG, TIG and spot), heat shrinking, metal finishing, body filling, forming, panel replacement and precision measurement.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities

<b>RANGE STATEMENT</b>	
	administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, templates, welding equipment (arc, oxy acetylene, MIG, TIG and spot), measuring equipment/ devices, vehicle protection, specialist tooling and equipment.
<b>Materials</b>	Materials may include welding consumables, adhesives and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repair of corroded panels and components</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3026 Repair aluminium body panels (finishing)

### Modification History

Release	Comment
Release 1	<p>Replaces AURV327466AA Repair aluminium body panels (finishing)</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out repairs of aluminium panels applying finishing and heat shrinking techniques.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, repair and checking of body panels and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out finishing	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>2.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>2.4. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.5. Repairs are checked to specification and workplace/equipment records are completed to worksite requirements.</p>
3. Carry out heat shrinking operations	<p>3.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>3.3. Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, authorised assistance is sought.</p> <p>3.4. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>3.5. Repairs are checked to specification and workplace/</p>

ELEMENT	PERFORMANCE CRITERIA
	equipment records are completed to worksite requirements.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to aluminium finishing of body parts, including the use of specialist tooling, measuring equipment and communication devices and the reporting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- material types and stress limits
- heat shrinking methods and techniques
- aluminium finishing methods and techniques
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- completing finishing repair of a panel containing a split of 250mm
- completing workplace/equipment records.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to aluminium finishing of body parts
- equipment, hand and power tooling appropriate to aluminium finishing of body parts
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Panel repair (aluminium finishing)</b>	Panel repair (aluminium finishing) covers finishing of aluminium panels using no fillers to repair splits/tears and dents.
<b>Panels</b>	Panels are of aluminium construction.
<b>Repair methods</b>	Repair methods are to include panel stripping and preparation, heat shrinking, welding (TIG and MIG), annealing, planishing and file finishing.
<b>WHS</b>	WHS requirements are to be in accordance with

<b>RANGE STATEMENT</b>	
	legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, templates, welding equipment, heat shrinking equipment, vehicle protection, specialist tooling and lifting

<b>RANGE STATEMENT</b>	
	equipment.
<b>Materials</b>	Materials may include welding consumables, filling materials and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to finishing of aluminium body panels</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Body
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## AURVTN3027 Repair aluminium body panels (filling)

### Modification History

Release	Comment
Release 1	Replaces AURV327466BA Repair aluminium body panels (filling) Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out body filler procedures to repair aluminium body panels.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, the repair of body panels, the checking of outcomes and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. Material for repair is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out repairs using fillers	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Protective equipment appropriate to repair activities is used.</p> <p>2.3. Components are repaired using approved methods and equipment in accordance with manufacturer/component supplier specification.</p> <p>2.4. Repairs are carried out to pre-paint condition.</p> <p>2.5. Repair activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.6. Repair is checked in accordance with workplace and manufacturer/component supplier requirements.</p> <p>2.7. Workplace/equipment documentation is completed and dealt with relevant to repair outcomes.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	3.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for repairing aluminium body panels incorporating filler materials
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair of body panels, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- material types and stress limits
- types of body filler and their application
- body filler repair procedures and techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- completing body filler repair procedures for at least one simulated vehicle panel with the following minimum repair requirements/specifications:
  - the panel to incorporate style line and pressings
  - a dent of a minimum of 400mm
  - a filling requirement of a maximum depth of 3mm over 75% of the repair area
- completing workplace/equipment documentation.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair of aluminium body panels
- equipment, hand and power tooling appropriate to repair of aluminium body panels
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

**EVIDENCE GUIDE**

	<p>Package.</p> <ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment must satisfy the endorsed assessment.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Panel repair (filler)**

Panel repair (filler) covers the restoration of the aluminium panel to original shape and contour by metal straightening techniques and application of fillers.

<b>RANGE STATEMENT</b>	
<b>Defects</b>	Defects include split/tear and dents.
<b>Repair fillers</b>	Repair fillers may be two-pack polyester and polystyrene types.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of

<b>RANGE STATEMENT</b>	
	practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling and equipment, templates, welding equipment, vehicle protection, specialist tooling and lifting equipment.
<b>Materials</b>	Materials may include filling materials and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, repair quotations, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair of aluminium body panels</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Body
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## AURVTN3028 Identify and repair high strength steel components

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to locate, identify and repair high strength steel (HSS), including advanced and ultra-high strength steel components in motor vehicles.</p> <p>Work involves identifying HSS components, confirming recommended repair procedure of original equipment manufacturer (OEM), selecting repair procedures and recommended welding method, removing and replacing HSS components, completing and testing processes, and clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to repair technicians who apply repair techniques to damaged vehicles in line with OEM-recommended procedures and industry codes of practice.</p> <p>Work is carried out according to OEM and industry codes of practice.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Locate, interpret and understand OEM-recommended repair processes for HSS	1.1.OEM repair processes and those of other recommended industry agencies are sourced using the internet or repair manuals 1.2.OEM repair processes and specifications are read and incorporated into the development of a repair plan 1.3.OEM-recommended <b>repair procedures</b> and workplace and industry codes of practice are followed 1.4.Personal protective equipment (PPE) is located and used correctly 1.5.Recommended repair <b>equipment</b> is located and checked for correct operation
2. Repair or replace HSS components	2.1.Sections not subject to repair are protected, using approved methods and equipment 2.2.HSS sections to be repaired are removed using recommended removal methods and equipment 2.3.Damaged surfaces are restored to a condition suitable for the fitting of replacement HSS components 2.4.Vehicle measuring and jiggging equipment is used to locate the replacement HSS component correctly according to OEM specifications 2.5.Protection of OEM surface coatings is maintained or reapplied 2.6.Replacement HSS components are aligned and secured within OEM tolerances 2.7.HSS components are repaired according to industry regulations, <b>statutory and regulatory authority</b> guidelines, <b>Workplace Health and Safety (WHS) requirements</b> and workplace procedures and policies
3. Weld HSS components	3.1.Recommended welding equipment is located and checked for correct operation in a repair environment 3.2.Sample welds are conducted, inspected and destruction tested 3.3.HSS components are refitted using recommended repair methods, materials and equipment 3.4.Recommended welding techniques are used and welds are inspected for defects 3.5.HSS repairs are completed without causing damage to other components or systems 3.6.Grinding procedures are followed according to OEM and weld material specifications

4. Clean up work area and maintain equipment	<p>4.1. Work area is cleaned and tidied according to workplace procedures</p> <p>4.2. Waste and scrap materials are removed following workplace and <i>environmental requirements</i> and procedures</p> <p>4.3. Tools and equipment are checked and faulty items are identified and tagged</p> <p>4.4. Equipment maintenance activities are completed according to workplace and manufacturer specifications</p>
5. Finalise HSS repair processes	<p>5.1. Repair <i>information and documents</i> are completed and filed according to workplace policy</p> <p>5.2. Repair and welding <i>quality requirements</i> are checked against OEM specifications and workplace quality standards</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow recommended repair procedure
  - follow workplace verbal instructions
- literacy skills to:
  - understand quality procedures
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record required OEM repair procedures and parts
- numeracy skills to interpret vehicle repair measuring equipment
- planning and organising skills to:
  - plan repair requirements and follow OEM repair specification
  - identify risk factors and take action to minimise them
  - follow workplace verbal instructions
- self-management skills to:
  - select and use appropriate repair equipment, materials, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as OEM repair procedures and industry codes of practice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to identifying and repairing HSS, including removal, alignment and welding methods
- technology skills to use the internet to collect information on OEM repair processes

#### Required knowledge

- WHS regulations and requirements relevant to HSS repair and replacement
- OEM recommended repair procedures and quality processes
- HSS recommended tools and equipment, including welding equipment
- personal protective equipment
- types and location of HSS components
- manufacturer and vehicle specifications and measurements
- body and panel alignment methods, techniques and procedures
- bonding, riveting and welding methods and procedures
- manual-handling techniques
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- identify and repair HSS components
- observe safety procedures and requirements
- communicate effectively with others involved
- select OEM-recommended repair methods and techniques
- complete HSS repairs in a systematic manner
- apply vehicle protection methods
- conduct recommended welding, bonding and riveting procedures
- inspect and test welds
- complete quality and workplace documentation.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- materials and information relevant to HSS repairs
- equipment, and hand and power tools appropriate to HSS

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- repairs
- OEM specifications
  - work instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Repair procedures</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• under-body or frame measurements</li> <li>• alignment equipment</li> <li>• jiggling systems</li> <li>• pre-repair activities</li> <li>• hydraulic reforming</li> <li>• sectional repair (other than at factory seams)</li> <li>• partial replacement at factory seams</li> <li>• visual and physical examination</li> <li>• panel beating</li> <li>• use of heat monitoring equipment</li> <li>• spot welding</li> <li>• MIG brazing</li> <li>• MIG welding</li> <li>• mechanical fastening</li> <li>• riveting</li> <li>• metal cutting</li> <li>• bonding</li> <li>• removing and replacing mechanical units</li> <li>• removing and replacing suspension, steering, transmissions and other assemblies and components.</li> </ul>
<p><b><i>Equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• vehicle alignment and jiggling systems</li> <li>• hand tools</li> <li>• power tools</li> <li>• heating equipment</li> <li>• heat monitoring equipment</li> <li>• welding equipment</li> <li>• lifting equipment</li> <li>• hydraulic push and pull equipment</li> <li>• measuring systems</li> <li>• clamping and anchoring systems.</li> </ul>
<p><b><i>Statutory and regulatory authorities</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• federal, state or territory, and local authorities administering Acts</li> <li>• Australian Design Rules</li> <li>• codes of practice</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• Australian standards.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace and personal safety</li> <li>• first aid equipment</li> <li>• equipment safety</li> <li>• safe handling of material</li> <li>• safe use of tools and equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• use of personal protective clothing</li> <li>• use of fire-fighting equipment.</li> </ul>
<b><i>Environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• measures to reduce pollution</li> <li>• waste management</li> <li>• noise control</li> <li>• dust control</li> <li>• clean-up management.</li> </ul>
<b><i>Information and documents</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal and written documents</li> <li>• graphical instructions</li> <li>• OEM specifications</li> <li>• work bulletins</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches</li> <li>• safe work procedures</li> <li>• regulatory and legislative requirements</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards.</li> </ul>
<b><i>Quality requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• OEM-recommended repair procedures and regulations</li> <li>• Australian standards</li> <li>• internal workplace quality policies</li> <li>• workplace operational policies and procedures.</li> </ul>

## Unit Sector(s)

Competency field	Vehicle Body
Unit sector	Technical – Body

## Custom Content Section

Not applicable.

## AURVTN3029 Set up and operate universal measuring systems

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to measure vehicle chassis misalignment, and set up and use a universal measuring system for vehicle chassis and body component repairs. The operator will be able to set up, operate and obtain measurements at pre- and post-repair intervals.</p> <p>The unit involves identifying and confirming work requirements and preparing for work.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to measuring vehicle upper and under-body in three dimensions. It involves the application of skills and knowledge required in using the measuring equipment, including clean-up and documentation at a body repair technician level.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Work is carried out according to original equipment manufacturer (OEM) specifications and recommended procedures, and industry codes of practice. Vehicles may include passenger vehicles, heavy vehicle trucks, buses and commercial vehicles.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine job requirements	<p>1.1.Job specifications and requirements are interpreted and determined from job sheets and work instructions</p> <p>1.2.Appropriate workplace health and safety (WHS) practices are identified according to <b>WHS, legislative</b> and <b>workplace requirements</b></p> <p>1.3.Measurement equipment <b>information</b> is interpreted for correct set-up and operation</p> <p>1.4.Vehicle chassis specifications are obtained from OEM or other recognised industry agencies</p>
2. Plan and prepare work	<p>2.1.OEM processes and specifications are read and incorporated into the development of a repair plan</p> <p>2.2.Vehicle specifications and recommended repair procedures are sourced using the internet or repair manuals</p> <p>2.3.Equipment and <b>resources</b> are checked for OEM compliance</p> <p>2.4.Relevant set-up procedures, repair plans, drawings and reference texts are followed according to job instructions</p> <p>2.5.Work is planned to include equipment set-up and operation to specifications and workplace procedures</p> <p>2.6.Work area is prepared according to WHS, legislative and workplace requirements</p> <p>2.7.Potential hazards are identified and prevention measures selected according to workplace procedures</p>
3. Conduct work	<p>3.1.Equipment set-up activities are completed without causing damage to workplace property, vehicles, systems or components</p> <p>3.2.Measuring system is secured and adjusted to vehicle according to equipment manufacturer recommended procedures</p> <p>3.3.Vehicle measurements are taken in three dimensions and repairs are carried out according to OEM procedures and workplace quality procedures</p>
4. Clean up work area and maintain equipment	<p>4.1.Waste and scrap are removed following workplace and environmental requirements and procedures</p> <p>4.2.Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>4.3.Faulty equipment is identified and tagged according to workplace policy</p> <p>4.4.Maintenance activities are completed according to manufacturer and component specifications and workplace procedures</p>

	4.5.Measuring equipment is maintained and stored according to workplace procedures
5. Finalise measurement processes	<p>5.1.Pre- and post-repair measurement readings that comply with OEM specifications, industry and workplace <i>standards</i> are recorded</p> <p>5.2.Vehicle dimensions are recorded for customer, insurance and workplace evidence</p> <p>5.3.Work completion details are finalised according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record vehicle specifications and repair procedures
  - document pre- and post-vehicle measuring results
- numeracy skills to interpret, calculate vehicle measuring equipment
- planning and organising skills to:
  - plan measuring equipment set-up
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate universal measuring equipment and tools
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as industry codes of practice and procedures
- technical skills to:
  - use workplace tools and equipment relating to the set-up and operation of universal measuring systems
  - use universal measuring equipment correctly
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks

#### Required knowledge

- relevant workplace health and safety and environmental regulations and workplace policies and procedures
- workplace technical documentation covering procedures, specifications, schedules and work plans or equivalent

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- workplace quality system documentation covering instructions, procedures, performance indicators and review processes or equivalent
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols
- problem-identification and resolution techniques
- procedures for operating universal measuring equipment
- universal measuring equipment safety requirements

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- comply with relevant legislation, regulations, standards, codes of practice and established safe practices and workplace policies and procedures for managing personal work priorities
- maintain working knowledge of current work systems and practices
- apply, within scope of own role, the requirements of the job or work role:
  - set up and operate universal measuring systems
  - measure upper and under-body
  - measure three dimensions
  - measure diamond and twist damage
  - effectively apply problem-solving techniques
- interpret and communicate equipment operational information
- employ safe work practices
- conduct pre- and post-vehicle measuring processes
- use universal measuring system and relevant tools and equipment.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- industry codes of practice.
- The following resources must be made available for the assessment of this unit:
- safe work environment
  - OEM specification
  - universal measuring equipment
  - workplace or simulated measuring activity
  - hand tools.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Workplace health and safety requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• legislation and regulations</li> <li>• workplace safety policies and procedures</li> <li>• use of personal protective equipment and clothing</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control and elimination</li> <li>• systems covering the use of hazardous materials and substances</li> <li>• manual-handling procedures, including for lifting and carrying.</li> </ul>
<p><b><i>Legislative requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• applicable legislation and regulations, including those relating to:             <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• duty of care</li> <li>• employee relations</li> <li>• environment protection</li> <li>• industrial relations.</li> </ul> </li> </ul>
<p><b><i>Workplace requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• environmental management: waste disposal, recycling and re-use guidelines</li> <li>• emergency and evacuation procedures</li> <li>• legal obligations</li> <li>• maintenance and storage procedures</li> <li>• WHS requirements</li> <li>• policies and procedures relating to own role and responsibility</li> <li>• procedures for using universal measuring equipment</li> <li>• instruction manuals</li> <li>• quality assurance guidelines</li> <li>• quality and continuous improvement processes and standards</li> <li>• recording and reporting guidelines.</li> </ul>
<p><b><i>Information</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• OEM-recommended repair specifications</li> <li>• workplace operating procedures</li> <li>• customer requirements</li> <li>• industry codes of practice</li> <li>• legislation.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Resources</i></b> may include:	<ul style="list-style-type: none"> <li>• measuring equipment set-up specifications</li> <li>• hand tools</li> <li>• identification of OEM chassis attachment points</li> <li>• job sheets</li> <li>• overhead measuring system</li> <li>• laser measuring system</li> <li>• trammel bar</li> <li>• parallel gauges</li> <li>• mechanical measuring system</li> <li>• computer-aided measuring system</li> <li>• tape measure</li> <li>• working drawings</li> <li>• work instructions</li> <li>• workplace supervisor or trainer</li> <li>• workplace or simulated workplace.</li> </ul>
<b><i>Standards</i></b> may include:	<ul style="list-style-type: none"> <li>• industry regulations and guidelines</li> <li>• OEM repair guidelines</li> <li>• OEM vehicle specifications</li> <li>• industry codes of practice</li> <li>• WHS legislation</li> <li>• workplace quality procedures.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Body

**Custom Content Section**

Not applicable.

## AURVTN3031 Conduct major sectional repairs

### Modification History

Release	Comment
Release 1	Replaces AURV326708A Carry out major sectional repair Performance Criteria and Range Statement updated to reflect repairs to vehicle body skirt and rails

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to carry out sectional repairs and replacement operations on vehicles with major damage, including structural components, rails and pillars.</p> <p>The unit involves identifying and confirming work requirements, preparing for work, selecting the repair method, removing damaged components, repairing damaged sections and components, replacing and aligning new or repaired components, and undertaking completion processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to vehicle body repair technicians conducting body or component repairs to a range of vehicles, including light vehicles, commercial vehicles, heavy vehicles, and agricultural and recreational vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, materials and equipment</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> and <b>personal protective equipment (PPE)</b> needs are observed throughout the work</p> <p>1.3. <b>Materials</b> for repair are selected</p> <p>1.4. <b>Tools and equipment</b> are identified and checked for safe and effective operation</p> <p>1.5. Procedures are determined to minimise waste material and maximise energy efficiency while completing the job</p> <p>1.6. Workplace <b>communication</b> policies are followed</p>
2. Perform major sectional repairs	<p>2.1. Sections not subject to repair are protected using approved methods and equipment</p> <p>2.2. Damaged sections are removed using approved methods and equipment</p> <p>2.3. Damaged surfaces are restored to a condition suitable for the fitting of new sections</p> <p>2.4. Replacement sections are aligned and secured according to original equipment manufacturer (OEM) specification</p> <p>2.5. Sections are refitted using approved <b>repair methods</b>, materials and equipment</p> <p>2.6. Sealant is selected and applied according to manufacturer and component supplier specification for type, application method and sealant thickness</p> <p>2.7. <b>Major sectional repairs</b> are completed without causing damage to other components or systems</p> <p>2.8. Removal and fitting activities are carried out according to industry regulations, <b>statutory and regulatory authorities'</b> guidelines, WHS legislation, and workplace policies and procedures</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>3.2. Waste and scrap are removed following workplace and <b>environmental requirements</b> and procedures</p> <p>3.3. <b>Equipment</b> and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>3.4. Faulty equipment is identified and tagged according to workplace policy</p> <p>3.5. Maintenance activities are completed according to manufacturer and component supplier specifications and</p>

	workplace procedures 3.6.Tools are maintained according to workplace procedures
4. Finalise repair processes	4.1.Repair <i>information and documents</i> are completed according to workplace policies and procedures 4.2.Repair <i>quality requirements</i> are checked against manufacturer and workplace quality standards

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of repair information, assistance and expert knowledge, to expand skills, knowledge and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record required repair procedures and parts
- numeracy skills to interpret vehicle repair measuring equipment
- planning and organising skills to:
  - plan repair requirement and follow job repair specification
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate repair equipment, materials, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as manufacturer specification, industry codes of practice and workplace procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to major sectional repairs, including the use of specialist tools
- technology skills to:
  - operate body repair equipment
  - use technology to collect and provide information on repair processes

#### Required knowledge

- workplace repair equipment
- OEM-recommended repair procedures

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- personal protective equipment
- types of steels and repair characteristics
- sectional repair procedure to skirt, rail or pillar
- manufacturer and component supplier specifications
- procedures for the correct use of tools and equipment
- alignment methods techniques and procedures
- welding and attachment procedures
- bonding and sealant methods and procedures
- vehicle or component protection procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- apply vehicle or component protection methods
- access repair information and identify approved sectioning method and location
- select the repair method most appropriate to the circumstances
- complete major sectional repairs which, at a minimum, are to sectionalise a skirt, rail or pillar section or equivalent
- complete workplace and equipment documentation.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- materials relevant to major sectional repair
- equipment, hand and power tools appropriate to major sectional repair
- vehicle specifications and work instructions.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• correct use of tools and equipment</li> <li>• first aid equipment</li> <li>• equipment safety</li> <li>• safe handling of material</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• personal safety</li> <li>• use of fire-fighting equipment</li> <li>• workplace environment</li> <li>• workplace safety.</li> </ul>
<b><i>Personal protective equipment:</i></b>	<ul style="list-style-type: none"> <li>• is that prescribed under legislation, regulations, codes of practice, and workplace policies and practices</li> <li>• may include: <ul style="list-style-type: none"> <li>• dust and fume collection equipment</li> <li>• breathing apparatus</li> <li>• eye protection</li> <li>• hearing protection</li> <li>• personal protective clothing</li> <li>• safety footwear.</li> </ul> </li> </ul>
<b><i>Materials</i></b> may include:	<ul style="list-style-type: none"> <li>• cleaning materials</li> <li>• sealants</li> <li>• welding consumables.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• clamps and anchoring devices</li> <li>• hand tools</li> <li>• heating and welding equipment, including oxy-acetylene, MIG and TIG</li> <li>• lifting and hydraulic push and pull equipment</li> <li>• measuring system</li> <li>• power tools and equipment</li> <li>• vehicle alignment jiggling systems.</li> </ul>
<b><i>Communication</i></b> may include:	<ul style="list-style-type: none"> <li>• faults reporting</li> <li>• OEM-recommended repair procedures</li> <li>• repair plans and instructions</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• verbal instructions</li> <li>• visual instructions</li> <li>• workplace instructions</li> <li>• written instructions.</li> </ul>
<b><i>Repair methods</i></b> may include:	<ul style="list-style-type: none"> <li>• under-body or frame measurements</li> <li>• alignment equipment</li> <li>• jiggling systems</li> <li>• pre-repair activities</li> <li>• hydraulic reforming</li> <li>• sectional repair</li> <li>• visual and physical examination</li> <li>• panel beating</li> <li>• welding</li> <li>• mechanical fastening</li> <li>• riveting</li> <li>• metal cutting</li> <li>• bonding</li> <li>• removal and replacement of:               <ul style="list-style-type: none"> <li>• mechanical units</li> <li>• suspension, steering, transmissions and other assemblies and components</li> </ul> </li> <li>• heating</li> <li>• metal finishing</li> <li>• filling.</li> </ul>
<b><i>Major sectional repairs</i></b> may include:	<ul style="list-style-type: none"> <li>• body rails</li> <li>• body pillars</li> <li>• radiator support</li> <li>• double panel section</li> <li>• box section panels</li> <li>• sill panels</li> <li>• quarter panels</li> <li>• vehicle chassis or frame</li> <li>• turrets</li> <li>• high stress steel (HSS) sections.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Statutory and regulatory authorities</i></b> may include:	<ul style="list-style-type: none"> <li>• federal, state or territory, and local authorities administering Acts</li> <li>• Australian Design Rules</li> <li>• industry codes of practice.</li> </ul>
<b><i>Environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• waste management</li> <li>• noise control</li> <li>• dust control</li> <li>• clean-up management.</li> </ul>
<b><i>Equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand tools</li> <li>• power tools and equipment</li> <li>• heating equipment</li> <li>• welding equipment, including MIG, TIG and SPOT</li> <li>• lifting equipment</li> <li>• hydraulic push and pull equipment</li> <li>• measuring system</li> <li>• vehicle alignment bench</li> <li>• clamping and anchoring systems</li> <li>• bonding and sealant.</li> </ul>
<b><i>Information and documents</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal or written job sheets and work orders</li> <li>• graphical instructions</li> <li>• work schedules, plans and specifications</li> <li>• workplace and vehicle manuals and bulletins</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches</li> <li>• safe work procedures</li> <li>• regulatory and legislative requirements</li> <li>• Australian Design Rules</li> <li>• OEM specifications</li> <li>• engineer's design specifications and instructions</li> <li>• workplace specifications and quality requirements</li> <li>• Australian standards.</li> </ul>
<b><i>Quality requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• OEM quality specifications</li> <li>• industry codes of practice</li> <li>• workplace quality and operations procedures.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Body

**Custom Content Section**

Not applicable.

## AURVTN3035 Apply original equipment manufacturer repair procedures

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to locate and apply original vehicle equipment manufacturer (OEM) recommended repair procedures, The unit involves body repair of high strength steel (HSS) components, vehicle painting, vehicle glazing and vehicle trimming repair processes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit applies to the auto body repair sector, including vehicle body repair of HSS components.</p> <p>Repairs or modifications are conducted by repair technicians in an automotive repair environment of passenger vehicles, commercial vehicles, heavy vehicles, agricultural plant and equipment, and recreational vehicles.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Locate, interpret and apply OEM-recommended repair procedure	1.1. <b><i>OEM-recommended repair procedure</i></b> is sourced using the internet or repair manuals 1.2. OEM repair procedure and specifications are read and applied to vehicle repairs 1.3. <b><i>Vehicle design specifications</i></b> are interpreted 1.4. Industry standards and safety requirements are interpreted and followed 1.5. <b><i>Tools and equipment</i></b> required to carry out tasks are sourced and checked prior to use
2. Ensure compliance with OEM repair and vehicle specifications	2.1. Vehicle specifications, engineering drawings and working drawings are identified and referred to 2.2. Relevant OEM repair procedures are checked to ensure compliance with industry <b><i>quality standards</i></b> 2.3. Repair procedures are reviewed to ensure OEM requirements and guidelines are met 2.4. Non-compliance of repairs is identified 2.5. <b><i>Workplace policies and procedures</i></b> are followed and maintained

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - communicate instructions from job specification sheets
  - communicate OEM-recommended repair procedures
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of OEM information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and interpret quality procedures
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record required repair procedures and parts
- numeracy skills to interpret and calculate OEM repair measurements
- planning and organising skills to:
  - plan repair requirements and follow repair specification
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate OEM-recommended repair equipment, materials, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as industry codes of practice and procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to OEM-recommended repair procedure, including:
  - specialist tools
  - measuring equipment
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- operate computer software and equipment
- use technology to collect and provide information on OEM-recommended repair processes

**Required knowledge**

- workplace health and safety (WHS) regulations needed to carry out work in a manner that ensures:
  - the safety of people
  - equipment cost minimisation
- waste avoidance policies, procedures and practices
- environmental protection relating to the disposal of waste material
- processes for operating IT systems
- problem-identification and resolution techniques
- workplace policies and procedures relating to OEM repair procedures
- quality standards as they relate to OEM repair procedures
- inspection techniques, including observation and written reports

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- source, interpret and apply manufacturer specifications and repair guidelines
- apply OEM-recommended repair procedures in an auto body context, which must include vehicle body repair, vehicle painting, vehicle glazing and vehicle trimming repair processes
- apply vehicle manufacturer specifications and guidelines, and information from engineering designs and drawings, to vehicle repairs
- review vehicle design compliance.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace repair practices and procedures
- following safety requirements
- following OEM repair procedures
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry standards and codes of practice.

The following resources must be made available for the assessment of this unit:

- IT systems
- vehicle specification details
- OEM specifications and engineering designs and drawings
- workplace policies and procedures

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- workplace tools and repair equipment.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>OEM-recommended repair procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• repair to vehicle body or component damage</li> <li>• refinishing of paint surface</li> <li>• replacement of vehicle glazing</li> <li>• repairs to trimmed components</li> <li>• repair sequence</li> <li>• selection of repair consumables</li> <li>• compliance with OEM-recommended procedure.</li> </ul>
<b><i>Vehicle design specifications</i></b> may include:	<ul style="list-style-type: none"> <li>• OEM engineering designs and drawings</li> <li>• Australian Design Rules</li> <li>• industry codes of practice</li> <li>• OEM-recommended repair procedures</li> <li>• vehicle repair manuals</li> <li>• vehicle specification sheets.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace tools and equipment</li> <li>• specialised tools for body repair</li> <li>• computers.</li> </ul>
<b><i>Quality standards</i></b> may include:	<ul style="list-style-type: none"> <li>• complying with OEM repair procedures</li> <li>• establishing and maintaining product and component repair specifications and tolerances</li> <li>• identifying and rectifying non-conforming parts or products</li> <li>• identifying, minimising and eliminating defects</li> <li>• complying with vehicle repair process or procedure</li> <li>• complying with inspection systems</li> <li>• complying with OEM vehicle specifications.</li> </ul>
<b><i>Workplace policies and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• environment and sustainability</li> <li>• vehicle repair and vehicle specifications</li> <li>• manufacturer specifications and industry codes of practice</li> <li>• WHS requirements</li> <li>• workplace quality policies and procedures</li> <li>• OEM repair standards</li> <li>• recording and reporting procedures.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Body

**Custom Content Section**

Not applicable.

## AURVTN4032 Determine vehicle damage and recommended repair procedures

### Modification History

Release	Comment
Release 1	<p>Replaces AURV465116A Determine vehicle damage and recommended repair procedures</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit identifies the competence required to inspect a vehicle for damage and recommend repair action.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection, determination of repair requirements, preparation of a written report, including repair recommendations and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine the job requirements, including job sheets and inspection procedures.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</li><li>1.4. Vehicle to be inspected is identified.</li><li>1.5. Procedures are determined to minimise inspection time.</li></ul>
2. Inspect vehicle to determine cause and extent of damage	<ul style="list-style-type: none"><li>2.1. Inspection is carried out according to industry regulations/ guidelines, WHS legislation, and enterprise procedures/ policies.</li><li>2.2. Repair methods that conform to vehicle manufacturer/ component supplier, insurance company, enterprise and statutory guidelines are identified and recommended.</li><li>2.3. Inspection is completed without causing damage to workplace, property or vehicle.</li></ul>
3. Prepare a written damage repair report	<ul style="list-style-type: none"><li>3.1. Written damage inspection report is prepared with sufficient information to enable preparation of repair quotation, including repair options.</li><li>3.2. Damage inspection report is appropriate to type of damage sustained.</li><li>3.3. Damage report refers to repair requirements identified, including in-house and sublet requirements.</li><li>3.4. Damage report is prepared and presented according to industry and enterprise guidelines/requirements.</li></ul>
4. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>4.1. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</li><li>4.2. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</li><li>4.3. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</li><li>4.4. Tooling is maintained in accordance with workplace procedures.</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for determining vehicle damage and recommending repair procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete tests, measurements and assessment of unit/component serviceability required for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and components)
- use workplace technology related to recommending repair procedures, including the use of measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- industry records and how to maintain them
- written communications and report writing
- vehicle inspection, damage assessment and test procedures
- vehicle inspection procedures
- industry standards
- work organisation and planning processes
- enterprise quality processes.

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- for a range of vehicles:
- assessing damage accurately without damage or injury to tooling, equipment and persons
- recommending repair action
- preparing a written repair report.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite,

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints,

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to vehicle inspection procedures
- equipment, hand and power tooling appropriate to vehicle inspection procedures
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package,

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge,

**EVIDENCE GUIDE**

	<p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies,</p> <p>Assessment may be applied under project related conditions and require evidence of process,</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances,</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements,</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role,</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include:

- inspection
- measurement
- partial dismantling
- completion of written report.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.

**RANGE STATEMENT****Information/documents**

Sources of information/documents may include:

- vehicle manufacturer/component supplier specifications, written enterprise procedures, insurance company reports, product manufacturer/component supplier specifications and customer report.
- safe work procedures related to vehicle inspection procedures.
- regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules.
- engineer's design specifications and instructions.
- organisation work specifications and requirements.
- instructions issued by authorised enterprise or external persons.
- Australian Standards.

**Unit Sector(s)****Unit sector**

Vehicle Body

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Body

## **AURVTN5034 Evaluate and select bodywork materials, equipment and processes**

### **Modification History**

Release	Comment
Release 1	Replaces AURT577394A Evaluate and select bodywork materials, equipment and processes Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### **Unit Descriptor**

<b>Unit descriptor</b>	<p>This unit covers the competence to research and evaluate the full range of bodywork materials, equipment and processes and to select that most appropriate for each particular specified application taking into account evolving technology and market needs.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit covers the work involved in evaluating and selecting the materials, equipment and processes required for the bodywork operations.</p> <p>The unit applies to those with responsibility for resource coordination and leadership of others individually and in teams.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine bodywork requirements	1.1. Requirements for bodywork activities are identified. 1.2. A framework and rating system is developed to facilitate comparisons of cost/benefits and other qualitative properties of materials, equipment and processes.
2. Gather data and specifications	2.1. Current best practice and future trends for undertaking bodywork are assessed to establish comparisons and benchmarks. 2.2. Steps required for bodywork processes are identified and flow charts produced, where necessary. 2.3. Specifications are identified to match each bodywork process. 2.4. Consultations are conducted with staff and management to identify additional or altered specifications. 2.5. Materials, tooling, and/or equipment requirements for the bodywork are identified and documented. 2.6. Existing materials, equipment and stock on hand is evaluated to match requirements of the proposed processes. 2.7. WHS requirements to provide safe work systems for the materials, equipment and processes are identified. 2.8. Data is compiled and documented.
3. Evaluate materials, equipment and processes against requirements	3.1. Materials are assessed for required quality, finish and conformity to standards. 3.2. Equipment options are identified. 3.3. Materials, equipment and processes are selected based on comparisons of performance, cost and specifications compared to the prepared rating system. 3.4. Processes are documented to enterprise and industry standards.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- research, collect, organise and understand information related to bodywork materials and equipment, including technical, regulatory, environmental and safety requirements.
- communicate ideas and information to enable clarification of the requirements, coordination of work with managers/supervisors, workers and customers, coordinated evaluation of options and reporting of outcomes.
- plan and organise activities, including the systematic identification, research and evaluation of options
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.
- use mathematical ideas and techniques to model the options and statistically compare results and potentials.
- create and apply systematic problem-solving techniques which will anticipate variables and cater for evaluations and comparisons.
- use the full scope of available workplace technology related to bodywork materials and equipment and to their analysis and evaluation.

#### Required knowledge

- industry sector developments and trends in terms of materials and equipment.
- company or equivalent business policies and plans, including forecast systems and products.
- company bodywork, market, work systems and existing equipment.
- legislative requirements of the bodywork activities.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<ul style="list-style-type: none"> <li>• Locate, interpret and apply information.</li> <li>• Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment.</li> <li>• Lead others and work effectively to improve production quality and outcomes.</li> <li>• Evaluate materials, equipment and bodywork processes considering:               <ul style="list-style-type: none"> <li>• materials and equipment currently available</li> <li>• materials and equipment innovations and potential</li> <li>• equipment capabilities and availabilities</li> <li>• workforce availabilities and capabilities</li> <li>• cost benefit analysis (or equivalent).</li> </ul> </li> <li>• Identify the impact of decisions in terms of commercial, environmental and safety risks.</li> <li>• Encourage participation of staff in the planning of work activities and changes.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Assessment may occur on the job or in a workplace simulated facility with process equipment, materials, work instructions and deadlines.</p> <p>Access to a full range of current and emerging bodywork technology information.</p>
<b>Method of assessment</b>	<p>Assessment methods must confirm consistency of performance over time and in a range of workplace contexts.</p> <p>Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</p> <p>Assessment should be conducted over time and may be in conjunction with assessment of other units of competence.</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</p>
<b>Guidance information for</b>	

**EVIDENCE GUIDE****assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Unit context**

- WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous substances and dangerous goods code, and safe operating procedures.
- Work is carried out in accordance with legislative obligations, Australian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements.
- Work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of faults.
- Materials and equipment options are to include those in general service in the industry and those identified as emerging technology.

**Workplace environment**

- The function is undertaken in accordance with established enterprise procedures and practices may include requirements recommended by manufacturer/component supplier.
- Customers or suppliers may be internal or external.

**Machines/equipment**

Machines/equipment may include:

- any machine typically used in the bodyworks industry
- microprocessor or computer controlled machines.

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
<b>Information and procedures</b>	<ul style="list-style-type: none"> <li>• Sector trade journals and related publications.</li> <li>• Work procedures/instructions.</li> <li>• Manufacturer/component supplier specifications and instructions.</li> <li>• Standard forms of workplace process and procedure.</li> <li>• Organisation work specifications and requirements.</li> <li>• Australian Design Rules.</li> <li>• Legislation/regulations/national and industry codes and practices relevant to the product.</li> <li>• Australian Standards and quality procedures.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle Body
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Body
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## AURVTP2001 Apply paint removal methods

### Modification History

Release	Comment
Release 1	Replaces AURV229503A Apply paint removal methods Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to apply paint removal methods to a variety of paint faults.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, determining and applying paint removal processes and procedures, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets, material types, colour, quality and quantity.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, breathing apparatus and full body protection, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Determine paint removal procedure	<p>2.1. Paint removal procedures are determined considering the type of finish material and the effects of processes on components in accordance with industry standard practices and customer requirements.</p> <p>2.2. Activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Remove paint	<p>3.1. Tooling, equipment and/or material are used according to type of paint to be removed, product manufacturer/ component supplier recommendations and industry/ workplace practices and procedures.</p> <p>3.2. Protective clothing and equipment are used during all stages of the removal process.</p> <p>3.3. The environment for the removal of paint conforms to requirements for extraction of fumes and cleanliness.</p> <p>3.4. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste material is removed and disposed of or stored according to statutory and workplace procedure.</p> <p>4.3. Equipment is cleaned as by manufacturer/component supplier and/or workplace policy and procedures.</p> <p>4.4. Work area is cleaned and inspected for serviceable</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>condition in accordance with workplace procedures.</p> <p>4.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.6. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.7. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for applying paint removal methods
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to apply paint and complete tests and assessment required for the work
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the application of paint removal methods, including the use of specialist tooling and equipment, measuring equipment, communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- environmental protection requirements/material disposal and storage requirements
- material safety data sheets
- types of refinishing materials
- paint removal processes and materials
- paint removal procedures, tooling and equipment
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying protection methods
- applying environmental procedures
- determining the paint removal process
- removing paint (chemically and mechanically).

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the application of paint removal methods
  - equipment, hand and power tooling appropriate to the application of paint removal methods
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

**EVIDENCE GUIDE**

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- chemical substances
- mechanical means
- protection of body/trim components
- polishing and detailing of surfaces

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of

<b>RANGE STATEMENT</b>	
	equipment <ul style="list-style-type: none"> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• abrasives, grinders and scrapers</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• chemical substances and cleaning materials.</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the application of paint removal methods</li> <li>• regulatory/legislative requirements pertaining</li> </ul>

**RANGE STATEMENT**

	<p>to automotive painting and finishing</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP2002 Carry out masking procedures

### Modification History

Release	Comment
Release 1	Replaces AURV229608A Carry out masking procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to apply masking medium in preparation for vehicle/component painting.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, application of masking medium in preparation for vehicle/component painting, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets, material types, dimensions and quantity.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Masking tooling and equipment are identified and checked for safe use.</p> <p>1.6. Procedures are determined to minimise waste materials.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Prepare vehicle body surfaces by masking	<p>2.1. Surfaces to be refinished are cleaned of contaminants.</p> <p>2.2. Components and ancillary fittings that can be affected by the refinishing process are protected and/or removed, tagged and stored securely.</p> <p>2.3. Surfaces adjacent to the surfaces to be refinished are protected using approved masking methods and materials.</p> <p>2.4. Preparation is completed without causing damage to component or system.</p> <p>2.5. Masking procedures are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>2.6. Waste materials are disposed of in accordance with statutory and enterprise requirements.</p>
3. Clean up work area and maintain equipment	<p>3.1. Materials that can be reused are collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedures.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	3.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for masking
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to apply masking material required for the work
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to carrying out masking procedures, including the use of specialist tooling and equipment, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- cleaning agents
- masking materials and procedures
- technical information
- vehicle safety requirements
- operating procedure of equipment
- masking procedures
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying vehicle protection methods
- completing the masking of a range of materials and surfaces.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to carrying out masking procedures
  - equipment, hand and power tooling appropriate to carrying out masking procedures
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Masking procedures**

Masking procedures are to be applied to:

- in-situ panels, doors, plastic components, glass work, fenders, boots, bonnets and other relevant components

**Masking methods**

Masking methods are to include:

- masking, dispensing and spraying

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	<p>may include:</p> <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>cutting blades/scalpels</li> <li>masking machines</li> <li>dispensers and spray equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>various masking tapes (crepe, PVC, door aperture and trim masking tapes)</li> <li>marking papers and films</li> <li>cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>safe work procedures related to carrying out masking procedures</li> <li>regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> <li>instructions issued by authorised enterprise or external persons</li> <li>Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP2003 Prepare spray painting materials and equipment

### Modification History

Release	Comment
Release 1	<p>Replaces AURV229749A Prepare spray painting materials and equipment</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to prepare spray painting materials and equipment for use.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, preparation of paint for spray guns, preparation of guns and associated equipment, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method and material type. 1.2. Job specifications are read and interpreted. 1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work. 1.4. Materials are selected and inspected for quality. 1.5. Hand, power tooling and safety equipment are identified and checked for operation. 1.6. Procedures are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Prepare paint for spray gun(s)	2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications. 2.2. Paints are mixed to conform to specification for type and colour, viscosity and temperature. 2.3. A test card is used for comparison of colour and texture. 2.4. Preparation activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies. 2.5. Paint is prepared without causing damage to component or system. 2.6. Waste materials are stored and/or disposed of in accordance with statutory and enterprise requirements.
3. Prepare spray gun(s) for spraying	3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications. 3.2. Preparation, maintenance and adjustment of spray painting equipment conforms to requirements of manufacturer/component supplier specifications. 3.3. Preparation activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies. 3.4. Spray guns are prepared without causing damage to component or system.
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored. 4.2. Waste and scrap is removed following workplace

ELEMENT	PERFORMANCE CRITERIA
	<p>procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for preparing spray painting material and equipment
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the preparation of spray painting material and equipment, including the use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- environmental protection requirements
- material storage, handling and disposal/material safety data sheets
- types of paints, including acrylic lacquers, solids, clear over base, air dry and polyurethane, and two component systems
- paint application methods
- spray guns and their application
- manufacturer/component supplier specifications for spray gun set-up and maintenance
- equipment preparation procedures
- paint mixing techniques
- paint drying methods
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying environmental procedures
- preparing automotive paint to specifications
- preparing spray guns and associated equipment to manufacturer/component supplier requirements.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the preparation of spray painting material and equipment
  - equipment, hand and power tooling appropriate to the preparation of spray painting material and equipment
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

**EVIDENCE GUIDE**

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- spray gun techniques
- various spraying techniques
- drying procedures
- paint mixing methods
- paint straining methods
- paint thinning methods

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to

<b>RANGE STATEMENT</b>	
	<p>include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• tinting machines</li> <li>• microfiche, scales</li> <li>• air-operated agitators</li> <li>• hand paddles</li> <li>• mixing banks</li> <li>• spray gun stem strainers</li> <li>• funnel strainers</li> <li>• mesh strainers</li> <li>• nylon stocking weave</li> <li>• vacuum paint strainers</li> <li>• viscosity measuring equipment</li> <li>• high-volume low-pressure spray guns</li> <li>• gravity feed spray guns</li> <li>• suction feed spray guns</li> <li>• pressure regulators</li> <li>• air compressors</li> <li>• spray booths</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• baking ovens</li> <li>• heating and lighting systems</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• acrylic lacquers</li> <li>• air dry synthetic enamels</li> <li>• two-pack urethane acrylic enamels</li> <li>• metallic two-pack enamels</li> <li>• clear acrylic lacquers</li> <li>• metallic acrylic lacquers</li> <li>• pearl finishes</li> <li>• water-based finishes</li> <li>• paint thinners and paint reducers</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the preparation of spray painting material and equipment</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP2004 Apply fundamental colour matching techniques

### Modification History

Release	Comment
Release 1	Replaces AURV229803AA Apply fundamental colour matching techniques  Unit code updated to meet policy requirements  Reference to OHS legislation replaced with new WHS legislation  Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to colour match paints using a colour mix test card.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method and material type. 1.2. Job specifications are read and interpreted. 1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work. 1.4. Materials are selected and inspected for quality. 1.5. Hand, power tooling and safety equipment are identified and checked for operation. 1.6. Procedures are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Mix paint colours	2.1. Mixing is performed using the appropriate method and/or system. 2.2. Paint is mixed without causing damage to component or system. 2.3. Mixing activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.
3. Prepare colour test card and perform visual matching test	3.1. Test card is prepared in the prescribed manner, to enable a visual comparison between matched and original paints. 3.2. Visual matching tests are performed and findings noted. 3.3. Matched and original paint comparisons are made and, if necessary, paint is remixed for further matching, prior to application. 3.4. Activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored. 4.2. Waste and scrap is removed following workplace procedure. 4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures. 4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures. 4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures. 4.6. Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for fundamental paint matching techniques
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to use equipment required for the work
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the application of colour matching techniques, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements
- material safety data sheets
- paint mixing techniques/mixing machines and systems set-up and operation
- colour codes and formulations/location
- fundamental colour mixing, matching and checking techniques
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying environmental procedures
- applying paint mixing procedures
- applying fundamental colour matching techniques.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the application of colour matching techniques
  - equipment, hand and power tooling appropriate to the application of colour matching techniques
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- spray gun techniques
- various spraying techniques
- drying procedures
- paint mixing methods
- paint straining methods
- paint thinning methods

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to

<b>RANGE STATEMENT</b>	
	<p>include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• tinting machines</li> <li>• microfiche</li> <li>• scales</li> <li>• air-operated agitators</li> <li>• hand paddles</li> <li>• mixing banks</li> <li>• spray gun stem strainers</li> <li>• funnel strainers</li> <li>• mesh strainers</li> <li>• vacuum paint strainers,</li> <li>• viscosity measuring equipment</li> <li>• high-volume low-pressure spray guns</li> <li>• gravity feed spray guns</li> <li>• suction feed spray guns</li> <li>• pressure regulators</li> <li>• air compressors</li> <li>• spray booths</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• baking ovens</li> <li>• heating and lighting systems</li> <li>• polishing and cleaning equipment</li> <li>• safety equipment</li> <li>• metal/cardboard test cards</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• acrylic lacquers</li> <li>• metallic acrylic lacquers</li> <li>• paint thinners</li> <li>• paint reducers</li> <li>• cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the application of colour matching techniques</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Pant
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## AURVTP2005 Apply rust prevention and sound deadening materials

### Modification History

Release	Comment
Release 1	<p>Replaces AURV230203A Apply rust prevention and sound deadening materials</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to apply special treatment material, such as rust prevention and sound deadening substances, to vehicle body component parts.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, preparation of surfaces for rust prevention and sound deadening treatment, application of special treatment materials, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method and material type.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Prepare surfaces for rust prevention and sound deadening materials	<p>2.1. Surfaces are cleaned and dried to enable the rust prevention and sound deadening material to adhere.</p> <p>2.2. Surfaces are prepared without causing damage to component or system.</p> <p>2.3. Preparation activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Apply special treatments and/or materials	<p>3.1. The environment for the application of special treatments or material conforms to requirements for temperature, extraction of fumes and cleanliness.</p> <p>3.2. Special treatments and/or materials are applied as per manufacturer/component supplier recommendations.</p> <p>3.3. Special treatments or materials are dried using approved methods and equipment, as necessary.</p> <p>3.4. Application is completed without causing damage to component or system.</p> <p>3.5. Application of special treatments or materials is completed within established industry guidelines.</p> <p>3.6. The finished product meets specifications for mechanical fastening and/or application for coverage depth, and texture, and is contaminant free.</p> <p>3.7. Application activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste material is disposed of and/or stored in accordance with statutory and enterprise</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>requirements.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for the application of rust prevention and sound deadening materials
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the application of rust prevention and sound deadening materials, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental procedures/material storage and disposal requirements
- material safety data sheets
- protective coatings and their use
- application methods
- brushes and spray guns
- spray gun/heat gun and brush techniques
- paint drying methods
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- observing environmental procedures
- preparing and applying a range of rust prevention and sound deadening materials
- drying rust prevention and sound deadening materials.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the application of rust prevention and sound deadening materials
  - equipment, hand and power tooling appropriate to the application of rust prevention and sound deadening materials
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- spray gun/heat gun techniques
- drying techniques
- hand brushing techniques
- mixing, thinning, matching and spraying techniques
- mechanical fastening techniques

#### Rust prevention and sound deadening materials

Rust prevention and sound deadening materials may include:

- spray-on sound deadening materials
- mechanically fastened sound deadening materials
- under-body sealers
- joint and seam sealants
- paint protection, rust protection and upholstery protection

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

<b>RANGE STATEMENT</b>	
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment</li> <li>extinguishing fires</li> <li>enterprise first aid requirements</li> <li>worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian standards</li> <li>internal company quality policies and standards</li> <li>enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>hand tooling</li> <li>power tooling</li> <li>spray guns</li> <li>heat guns</li> <li>air pressure regulators</li> <li>heating and lighting systems</li> <li>safety equipment</li> <li>mixing equipment</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• stirring equipment</li> <li>• straining/thinning equipment</li> <li>• hand brushing equipment</li> <li>• paint pots</li> <li>• mechanical fastening equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• rust prevention and sound deadening materials</li> <li>• brushes</li> <li>• cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the application of rust prevention and sound deadening materials</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP2006 Prepare vehicle components for paint repairs

### Modification History

Release	Comment
Release 1	<p>Replaces AURV230349A Prepare vehicle components for paint repairs</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to prepare body surfaces and apply primers and primer surfaces prior to final paint coats.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, preparation of body surfaces for final paint by application of primers and primer surfaces, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including method and material type. 1.2. Job specifications are read and interpreted. 1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work. 1.4. Materials are selected and inspected for quality. 1.5. Hand, power tooling and safety equipment are identified and checked for operation. 1.6. Procedures are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Prepare vehicle surfaces for painting	2.1. Information is accessed and interpreted from manufacturer/component supplier specifications. 2.2. Surfaces adjacent to the surfaces to be painted are protected using approved methods and material. 2.3. Surfaces to be painted are cleaned of contaminants. 2.4. Components and ancillary fittings that can be affected by the painting process are protected and/or removed and stored securely. 2.5. Surfaces to be painted are prepared using approved methods, material and equipment. 2.6. Unrecorded damage to surfaces and ancillary equipment is noted and reported to persons. 2.7. Surface preparation activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies. 2.8. Waste material is disposed of in accordance with statutory and enterprise requirements.
3. Apply primers	3.1. Components and ancillary fittings that can be affected by application processes are protected and/or removed and stored safely. 3.2. Primers/primer surfaces are applied using approved methods, materials and equipment. 3.3. Application activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies. 3.4. Work is completed without causing damage to any

ELEMENT	PERFORMANCE CRITERIA
	component or system.
4. Prepare primed surface for refinishing	<p>4.1.Surfaces to be refinished are prepared using approved methods, materials and equipment.</p> <p>4.2.Preparation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>4.3.Work is completed without causing damage to any component or system.</p> <p>4.4.Waste materials are disposed of in accordance with statutory and enterprise requirements.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap is removed following workplace procedure.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/material disposal and storage requirements
- material safety data sheets
- cleaning materials
- preparation methods
- industry codes of practice
- primer/paint application methods, including rolling
- rubbing down procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- cleaning and masking the areas/equipment for paint repairs
- removing components and ancillary fittings for protection
- applying primers to manufacturer/component supplier specifications.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the preparation of vehicle components for paint repairs
  - equipment, hand and power tooling appropriate to the preparation of vehicle components for paint repairs
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail,

**EVIDENCE GUIDE**

	<p>Service and Repair Training Package.</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Components</b>	<p>Vehicle components to be prepared are to include:</p> <ul style="list-style-type: none"> <li>• in-situ panels</li> <li>• doors</li> <li>• plastic components</li> <li>• glasswork</li> <li>• bonnets</li> </ul>
<b>Preparation</b>	<p>Preparation may include:</p> <ul style="list-style-type: none"> <li>• internal and external trim</li> <li>• accessories</li> <li>• lights</li> <li>• rubber seals</li> <li>• protective strips</li> <li>• decals</li> <li>• striping</li> </ul>
<b>Preparation methods</b>	<p>Preparation methods are to include:</p> <ul style="list-style-type: none"> <li>• adhesive bonding</li> <li>• sanding (wet and dry)</li> <li>• masking</li> <li>• surface preparation</li> <li>• chemical cleaning</li> <li>• priming</li> <li>• paint touch-up</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of fire fighting equipment</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• power tooling</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"><li>• cleaning equipment</li><li>• adhesive equipment</li><li>• spray painting equipment</li><li>• rubbing down equipment</li><li>• paint rollers</li><li>• hand touch-up equipment</li></ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• paint primers and cleaning materials</li></ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"><li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li></ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li><li>• safe work procedures related to the preparation of vehicle components for paint repair</li><li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP2007 Apply paint touch-up techniques

### Modification History

Release	Comment
Release 1	Replaces AURV230449A Apply paint touch-up techniques Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to prepare equipment and apply materials for paint touch-up or minor repairs.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, preparation of equipment for application of material for paint touch-up, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method and material type.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Prepare equipment	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Preparation is carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Prepare and apply materials	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Preparation and application of materials is carried out in accordance with manufacturer/component supplier specifications.</p> <p>3.3. Preparation and application of materials is carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for the preparation and use of equipment and material for paint touch-up techniques
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to use equipment and mix material required for the work
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the preparation and use of equipment and material for paint touch-up techniques, including the use of specialised tooling and equipment, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/material disposal and storage
- material safety data sheets
- industry code of practice
- the types, applications and preparation processes for paints
- paint mixing procedures
- spraying equipment procedures
- equipment/material safety requirements
- hand painting procedures, including rolling
- application procedures
- work organisation and planning processes

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- preparing a range of equipment
- preparing a range of materials
- the completion of touch-up painting for a range of circumstances, including the use of spray equipment and brushes
- applying a range of touch-up materials.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to the preparation and use of equipment and material for paint touch-up techniques
  - equipment, hand and power tooling appropriate to the preparation and use of equipment and material for paint touch-up techniques
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Application systems and equipment

Application systems and equipment are to include:

- spray gun techniques
- drying techniques
- paint mixing
- paint rolling
- paint straining
- paint thinning
- paint matching
- buffing and polishing

#### Materials

Materials are to include:

- oil-based paints
- water-based paints
- synthetic paints
- vinyl paints,
- undercoats
- lacquers
- enamels
- paint thinners and paint reducers

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment</li> <li>extinguishing fires</li> <li>enterprise first aid requirements</li> <li>worksite evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian Standards</li> <li>internal company quality policy and standards</li> <li>enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>spray guns</li> <li>air pressure regulators</li> <li>air compressors</li> <li>personal protective equipment</li> <li>spray booths</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• heating and lighting systems</li> <li>• safety equipment</li> <li>• mixing equipment</li> <li>• paint stirring equipment</li> <li>• paint straining and thinning equipment</li> <li>• paint pots</li> <li>• machine buffs and polishes</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• paint, thinners and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the preparation and use of equipment and material for paint touch-up techniques</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP2008 Clean and polish vehicle exterior paint

### Modification History

Release	Comment
Release 1	Replaces AURV231809CA Clean and polish vehicle exterior paint Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to carry out vehicle body exterior paint cleaning and polishing.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, cleaning and polishing vehicle body exterior paint work, and completion of work finalisation processes, including clean-up and documentation</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine work requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Clean vehicle body exterior paint	<p>2.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>2.2. Materials are selected according to vehicle finish type, workplace methods and paint manufacturer/component supplier recommendations.</p> <p>2.3. Materials are used and stored according to manufacturer/ component supplier recommendations and regulatory requirement.</p> <p>2.4. Vehicle body exterior finish is cleaned according to workplace and industry/product manufacturer/component supplier prescribed methods and procedures.</p> <p>2.5. Cleaning is completed without causing damage to component or system.</p> <p>2.6. Vehicle body exterior paint is cleaned according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Polish vehicle body exterior paint	<p>3.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>3.2. Materials are selected according to vehicle finish type, workplace methods and paint manufacturer/component supplier recommendations.</p> <p>3.3. Materials are used and stored according to manufacturer/ component supplier recommendations</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>and regulatory requirements.</p> <p>3.4.Vehicle body exterior paint is polished according to workplace, and industry/product manufacturer/component supplier prescribed methods and procedures.</p> <p>3.5.Polishing is completed without causing damage to component or system.</p> <p>3.6.Vehicle body exterior finish is polished according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1.Material that can be reused is collected and stored.</p> <p>4.2.Waste material is removed following workplace and environmental procedure.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for vehicle cleaning and polishing
- identifying safety precautions
- identifying recommended applications and procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- reading and interpreting product labels/directions
- listening and following verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to cleaning and polishing vehicle exterior paint, including the use of measuring equipment and communication devices and the reporting/ documenting of results

#### Required knowledge

Required knowledge includes:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- environmental requirements for storage, handling and disposal of substances
- material safety data sheets
- cleaning agents and their recommended applications
- polishing agents and their recommended applications
- cleaning and polishing procedures for vehicle body exterior finish
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- selecting and using material and equipment
- cleaning and polishing of a range of vehicle body exterior paints.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to cleaning and polishing vehicle exterior paint
  - equipment, hand and power tooling appropriate to cleaning and polishing vehicle exterior paint
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods are to include:

- manual or machine assisted cleaning and polishing

#### WHS requirements

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• polishers</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• cleaning and polishing agents and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to cleaning and polishing vehicle exterior paint</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP2009 Apply vehicle body film wrapping

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to prepare various vehicle body surfaces and apply vinyl film wrapping materials.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the application of coloured vinyl film materials to vehicle bodies.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine <i>job requirements</i>, including required method of application, and type of film-wrapping material and equipment</p> <p>1.2. <i>Workplace health and safety (WHS) requirements</i> are identified and followed</p> <p>1.3. Film wrapping and other necessary <i>materials</i> are selected</p> <p>1.4. <i>Tools and equipment</i> are identified, checked and used correctly</p> <p>1.5. Application procedures are determined to minimise mistakes and waste and maximise energy efficiency while completing the job</p> <p>1.6. Vehicle panel surface is assessed for quality</p>
2. Measure and cut film-wrapping materials	<p>2.1. Film supplier specifications are accessed and interpreted</p> <p>2.2. Measurement, cutting and template production are performed according to film supplier specifications, industry regulations and guidelines, WHS requirements, <i>statutory and regulatory authority requirements</i>, and workplace procedures</p> <p>2.3. Surfaces are measured, material patterns and templates are produced, and cut is made without causing damage to vehicle body surface</p> <p>2.4. Workplace documents are completed relevant to film size cutting and application outcomes</p>
3. Prepare vehicle surface and apply film-wrapping material	<p>3.1. Surface is prepared using approved methods, materials and equipment, according to the specifications of film-wrapping material</p> <p>3.2. Film-wrapping materials are applied according to supplier specifications and <i>quality requirements</i></p> <p>3.3. Film-wrapping applications are inspected and tested according to suppliers' recommended procedures</p> <p>3.4. Film-wrapping applications are completed without causing damage to vehicle and according to industry regulations and guidelines, WHS requirements and workplace policies and procedures</p> <p>3.5. Workplace documents are completed</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>4.2. Waste and scrap are removed following workplace and <i>environmental procedures</i></p> <p>4.3. Equipment and work area are cleaned and inspected for</p>

	<p>serviceable condition according to workplace procedures</p> <p>4.4.Faulty equipment is identified and tagged according to workplace requirements</p> <p>4.5.Workplace <i>emergency procedures</i> are identified and followed when required</p> <p>4.6.Tools are maintained according to workplace procedures</p>
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow work instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
- numeracy skills to measure and calculate film-wrapping materials
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - plan film-wrapping application following job specification
  - identify risk factors and take action to minimise them
- problem-solving skills to refer problems outside area of responsibility to appropriate person and suggest possible causes
- self-management skills to:
  - select and use appropriate film-wrapping products, materials, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as codes of practice
- technical skills to use film-wrapping specialist tools and equipment
- technology skills to use tools and equipment to collect and provide information on film-wrapping processes

#### Required knowledge

- industry codes of practice relating to vehicle body film wrapping
- WHS, environmental and emergency requirements and procedures
- automotive film wrapping application techniques
- workplace policies and procedures and quality requirements relating to film wrapping
- procedures for the correct use of film wrapping tools and equipment

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to film-wrapping application
- clean surfaces before and after applying film wrapping
- measure and cut film templates and material templates
- apply film to a range of motor vehicle body shapes
- follow film supplier specifications
- follow workplace procedures.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice
- film supplier specifications.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- materials relevant to the preparation of surfaces and the application of film wrapping materials
- film wrapping material

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

- specialised tools and equipment
- hand and power tools
- specifications and work instructions.

**Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Job requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• identification of material and work requirements</li> <li>• preparation of film-wrapping materials</li> <li>• measuring and cutting of vehicle film-wrapping materials</li> <li>• preparation of surfaces</li> <li>• application of vehicle film wrapping</li> <li>• cutting of patterns and templates to suit vehicle body shapes</li> <li>• film-wrapping application and job completion processes</li> <li>• clean-up</li> <li>• documentation.</li> </ul>
<p><b><i>Workplace health and safety requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• dust and fume collection</li> <li>• personal protective clothing and equipment, such as:               <ul style="list-style-type: none"> <li>• eye protection</li> <li>• personal protective clothing</li> <li>• safety footwear</li> </ul> </li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace first aid procedures</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<p><b><i>Materials</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• film-wrapping materials</li> <li>• patterns</li> <li>• templates</li> <li>• cleaning fluids</li> <li>• cleaning cloths</li> <li>• hand tools</li> <li>• scrapers</li> <li>• cleaning solutions.</li> </ul>
<p><b><i>Tools and equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• hot-air gun</li> <li>• hand tools</li> <li>• scrapers</li> <li>• plastic squeegees</li> <li>• cutting and special application tools.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Statutory and regulatory authority requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• federal, state or territory, and local authorities administering Acts</li> <li>• regulations and industry codes of practice.</li> </ul>
<b><i>Quality requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• industry standards</li> <li>• supplier-recommended application procedures</li> <li>• supplier specifications</li> <li>• workplace quality policy.</li> </ul>
<b><i>Environmental procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• waste management</li> <li>• noise control</li> <li>• dust and fume collection</li> <li>• clean-up management.</li> </ul>
<b><i>Emergency procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• emergency shutdown</li> <li>• extinguishing fires</li> <li>• workplace first aid requirements</li> <li>• worksite evacuation.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Paint

**Custom Content Section**

Not applicable.

## AURVTP2026 Carry out basic airbrush application techniques

### Modification History

Release	Comment
Release 1	<p>Replaces AURV232208A Carry out fundamental airbrush application techniques</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to carry out fundamental airbrush application techniques on a variety of substrates.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, application of materials and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, material type, colour, quality and quantity.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, breathing apparatus and full body protection, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Identify common types of airbrush used, describe their operating principles, cleaning and maintenance procedures	<p>2.1. Airbrush types, main parts and functions are identified and described.</p> <p>2.2. Correct cleaning and maintenance procedures are described and demonstrated.</p>
3. Apply airbrush techniques over prepared stencils	<p>3.1. Surfaces are prepared for airbrush application.</p> <p>3.2. Prepared stencil mediums are airbrushed over to produce flat wash, graded wash, dimensional effects and geometric shapes.</p> <p>3.3. Accurate visual texture, light and shade on given subject matter is achieved.</p>
4. Produce designs and illustrations with one colour using airbrush graduation techniques	<p>4.1. Controlled straight and curved work using airbrush graduation techniques is carried out.</p> <p>4.2. Shading patterns and designs are produced using airbrush graduation techniques.</p>
5. Prepare a substrate ready to accept a clear top coat	<p>5.1. Correct abrasives to carry out substrate preparation for clear top coat finishes are identified and selected.</p> <p>5.2. Correct cleaning and drying procedures in relation to sludge removal is carried out.</p> <p>5.3. Preparation of the surface to accept clear top coats using solvent cleaners and tack rags is carried out.</p>
6. Apply clear top coat	<p>6.1. Refinishing materials are applied without causing</p>

ELEMENT	PERFORMANCE CRITERIA
refinishing materials by spray gun	<p>damage to any component or system.</p> <p>6.2.The finish produced meets specifications for, texture, depth and gloss and is contaminant-free.</p> <p>6.3.Surface refinishing is completed within approved timeframes.</p> <p>6.4.Application activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
7. Clean up work area and maintain equipment	<p>7.1.Material that can be reused is collected and stored.</p> <p>7.2.Waste material is removed and disposed of or stored according to statutory and workplace procedure.</p> <p>7.3.Spray equipment is cleaned as specified by manufacturer/ component supplier and/or workplace policy and procedures.</p> <p>7.4.Work area is cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>7.5.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>7.6.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>7.7.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for the identification and analysis of technical information
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal, replacement, fitting and testing of components/accessories, including the use of specialist tooling and equipment, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/substance disposal and storage requirements
- material safety data sheets (MSDS)
- types of paints used for airbrushing
- types and main parts of airbrush
- types of masking and stencil mediums
- types of clear coat refinishing materials
- application methods
- types of spray guns

**REQUIRED SKILLS AND KNOWLEDGE**

- airbrush operation (spraying techniques)
- spray gun operation (spraying techniques)
- spray gun cleaning methods
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- preparing a surface ready to accept colour coats airbrushed applications
- demonstrating custom graphic techniques including, pictorial reproduction, highlighting, special effects
- preparing clear top coat paint refinishing materials
- applying clear top coat refinishing materials.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials required for the application of fundamental airbrush designs
  - clear top coat refinishing materials
  - equipment, hand and power tooling appropriate to application of refinishing materials
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment

**EVIDENCE GUIDE**

	<p>Guidelines of the Automotive Industry Retail, Service and Repair Training Package.</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Airbrush types</b>	<p>Airbrush types may include:</p> <ul style="list-style-type: none"> <li>• single action</li> <li>• double action</li> <li>• gravity feed</li> <li>• side feed</li> </ul>
<b>Airbrush main parts</b>	<p>Airbrush main parts may include:</p> <ul style="list-style-type: none"> <li>• air cap</li> <li>• fluid needle</li> <li>• fluid tip</li> <li>• fluid and adjustment screw</li> <li>• air valve</li> <li>• gun body</li> <li>• fluid needle packing gland</li> <li>• trigger</li> <li>• spreader adjustment valve</li> </ul>
<b>Airbrush techniques</b>	<p>Airbrush techniques may include:</p> <ul style="list-style-type: none"> <li>• stencilling techniques</li> <li>• graduation techniques</li> </ul>
<b>Refinishing materials</b>	<p>Refinishing materials may include:</p> <ul style="list-style-type: none"> <li>• acrylic base coats</li> <li>• water-based and acrylic lacquers</li> <li>• paint reducers</li> </ul>
<b>Refinishing methods</b>	<p>Refinishing methods include:</p> <ul style="list-style-type: none"> <li>• air brush/spray gun selection</li> <li>• equipment protection and maintenance methods</li> <li>• various spraying techniques</li> <li>• drying procedures</li> <li>• paint mixing</li> <li>• compound polishing</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>detailing of surfaces</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment</li> <li>use of tooling and equipment</li> <li>workplace environment and safety</li> <li>handling of materials</li> <li>use of firefighting equipment</li> <li>enterprise first aid</li> <li>hazard control and hazardous materials and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment</li> <li>extinguishing fires</li> <li>enterprise first aid requirements</li> <li>worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian standards</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• various air brushes, spray guns, air pressure regulators, air compressors, spray booths, baking ovens, heating and lighting systems, strainers, measuring sticks and safety equipment</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• templates</li> <li>• masking medium</li> <li>• stencils</li> <li>• tac rags</li> <li>• polishing buffs and pads</li> <li>• cleaning solvents</li> <li>• compounds, glazes and cleaning materials</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, MSDS, diagrams or sketches</li> <li>• safe work procedures related to application of colour and clear coat refinishing materials</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP2027 Carry out custom graphics design and layout techniques

### Modification History

Release	Comment
Release 1	<p>Replaces AURV232108A Carry out custom graphics design and layout techniques</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to prepare a range of graphic designs/layouts through the development and cutting of stencils and use of specialised masking medium in preparation for the application of specialised custom paint finishes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, application of materials, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, material type, colour, quality and quantity.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Determine design, layout, colours and graphics	<p>2.1. Type of design and layout determined in accordance with project brief.</p> <p>2.2. Selection of colours and graphics determined in accordance with project brief.</p> <p>2.3. Clarify specifications, parameters or constraints of the brief in consultation with relevant colleagues.</p> <p>2.4. Correctly identify the resources required for the graphic design, including work space, materials, tools and equipment.</p> <p>2.5. Develop draft sketch of design layout using selected tools/ equipment and materials.</p> <p>2.6. Draft design layout sketch incorporates agreed design elements for approximate size, colour and graphic preferences.</p>
3. Refine design, layout, colours and graphics and develop a working plan	<p>3.1. Draft design layout amended to suit client's requirements.</p> <p>3.2. Appropriate colour combinations and effects for pictorial reproduction mediums and equipment to produce various designs are specified.</p> <p>3.3. Develop working plan for the design layout incorporating accurate sizing, colour samples and specifying the number of overlays and stencils required.</p>
4. Prepare stencils	<p>4.1. Stencil material is selected appropriate for the type of graphic design to be applied.</p> <p>4.2. Quality and size of stencil material are checked for</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>conformance to job specifications and suitability of equipment used.</p> <p>4.3.Design is applied to stencil material by; freehand drawing, photography/projector and/or computer-aided printing and/or cutting methods.</p> <p>4.4.Stencil cutting instruments are selected according to job specifications.</p> <p>4.5.In the case of computer-aided stencil cutting equipment; the equipment is set up and the stencil material is positioned in plotter according to manufacturer/supplier specifications.</p> <p>4.6.Stencil material is cut and weeded according to manufacturer/supplier specifications in such a way as to avoid excessive waste.</p> <p>4.7.Before mounting or applying the stencil to the work-piece, it is checked for conformance to job specifications and appropriate action is taken.</p>
5. Specify mediums to be applied to paint surfaces to create a variety of different visual effects	<p>5.1.Substrates, backgrounds, materials and equipment used for creation of a range of visual effects are identified.</p> <p>5.2.Accurate visual texture, light and shade on given subject matter is defined.</p> <p>5.3.Requirements to achieve special effects for selected illustrations/graphics are specified, including:</p> <p>5.3.1. highlighting, reflection, and transparency techniques</p> <p>5.3.2. texture simulations, including; stone, liquid, leather, metal, fish scales and marbling</p> <p>5.3.3. 3D effects, to create visual realism</p> <p>5.3.4. tribal/Indigenous art styles.</p> <p>5.4.Appropriate colours to the given subject, achieving correct tones and tonal order are selected and specified.</p> <p>5.5.Lines, shapes, dots, patterns and illustrations to be produced using freehand techniques with the assistance of shields, templates and/or stencils are specified.</p> <p>5.6.Appropriate backgrounds, colour combinations and the effectiveness of colour are identified and applied.</p>
6. Clean up work area and maintain equipment	<p>6.1.Material that can be reused is collected and stored.</p> <p>6.2.Waste material is removed and disposed of or stored according to statutory and workplace procedure.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>6.3. Work area is cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>6.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>6.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>6.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for the identification and analysis of technical information
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal, replacement, fitting and testing of components/accessories, including the use of specialist tooling and equipment, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/substance disposal and storage requirements
- computer-aided design software and hardware
- material safety data sheets (MSDS)
- pictorial and graphical reproduction
- special effects techniques
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- preparing draft graphic design layouts according to client's brief
- preparing a working plan for the application of the graphic design - specifying accurate sizing, colour samples and the number of overlays
- develop and prepare stencils to create special effects to given illustrations/graphics, including:
- highlighting, reflection, and transparency techniques
- texture simulations, including 'Ebola virus', stone, liquid, leather, metal, fish scales and marbling
- 3D effects, to create visual realism
- tribal/indigenous art styles
- applying environmental procedures.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials and equipment required for the development of graphic designs and layouts

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"><li>• activities covering mandatory task requirements</li><li>• specifications and work instructions.</li></ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"><li>• Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.</li><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### **Fundamental custom graphic techniques**

Fundamental custom graphic techniques include:

- pictorial reproduction
- highlighting
- reflective and transparency techniques
- texture simulation
- metal, stone and liquid simulations
- leather simulation
- chrome simulation
- marbling

#### **Graphic designs and layouts**

Graphic designs and layouts may be created by:

- freehand or with the aid of computer-aided design, printing and plotting equipment and/or photographic and projection equipment

#### **WHS requirements**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of materials
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

#### **Personal protective equipment**

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and practices

#### **Safe operating procedures**

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments

<b>RANGE STATEMENT</b>	
	associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to: <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• manual stencil cutting equipment</li> <li>• computer-aided printing equipment</li> <li>• computer-aided stencil cutting equipment</li> <li>• photographic and projection equipment</li> <li>• safety equipment</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• shields</li> <li>• templates</li> <li>• stencils</li> <li>• masking medium</li> <li>• pin-stripping materials</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• tac rags</li> <li>• cleaning solvents</li> <li>• compounds, glazes and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, MSDS, diagrams or sketches</li> <li>• safe work procedures related to application of colour and clear coat refinishing materials</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Paint
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## AURVTP3010 Prepare spray booths and paint drying equipment

### Modification History

Release	Comment
Release 1	Replaces AURV329549A Prepare spray booths and paint drying equipment Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required for the preparation of paint drying equipment, such as spray booths, ovens and infra-red drying equipment.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, the preparation of spray booths, the preparation of paint drying equipment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method and material type.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for use.</p> <p>1.6. Procedures are determined to minimise waste time.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Prepare spray booth and drying equipment	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Protective clothing and equipment appropriate to preparation process are used.</p> <p>2.3. Preparation, maintenance and adjustment of spray booth and drying equipment conforms to requirements of manufacturer/component supplier specifications.</p> <p>2.4. Drying equipment is prepared without causing damage to any component or system.</p> <p>2.5. Preparation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedure.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for preparing spray booth and paint drying equipment
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to use equipment for the work
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to preparation of spray booths and drying equipment, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types of spray booths and drying equipment
- paint drying methods
- equipment preparation procedures
- manufacturer/component supplier specifications for equipment set up and maintenance
- environmental protection requirements
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• preparing a range of spray booths and drying equipment to workplace and manufacturer/component supplier requirements.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to preparation of spray booths and drying equipment</li> <li>• equipment, hand and power tooling appropriate to preparation of spray booths and drying equipment</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also</li> </ul>

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Booths and equipment**

Booths and equipment are to include spray booths, drying booths, baking ovens, infra-red equipment, heating and lighting systems.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Materials</b>	Materials are to include industrial cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include:

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to preparation of spray booths and drying equipment</li><li>• regulatory/legislative requirements pertaining to the painting of vehicles and components</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP3011 Apply solid acrylic enamel refinishing materials using two component systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURV329603BA Apply solid acrylic enamel refinishing materials (two component system)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to apply solid acrylic enamel refinishing materials (two component system) to a variety of vehicle substrates by spray gun application and determine causes and apply rectification procedures for paint finish faults.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, application of materials, the rectification of faults and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, material type, colour, quality and quantity.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, breathing apparatus and full body protection, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Apply solid acrylic enamel refinishing materials by spray gun	<p>2.1. The environment for application of refinishing materials conforms to requirements for temperature, extraction of fumes and cleanliness.</p> <p>2.2. Refinishing materials are applied at manufacturer/component supplier recommended intervals using approved methods.</p> <p>2.3. Refinishing materials are dried using approved methods and equipment.</p> <p>2.4. Paint film surface faults are removed using compounds, polishes and glazes.</p> <p>2.5. Refinishing materials are applied without causing damage to any component or system.</p> <p>2.6. The finish produced meets specifications for colour, texture, depth and gloss and is contaminant-free, blending into the surrounding surfaces.</p> <p>2.7. Surface refinishing is completed within approved timeframes.</p> <p>2.8. Application activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Identify paint faults, causes and rectification procedures	<p>3.1. Paint faults are identified according to industry and workplace procedures.</p> <p>3.2. Paint fault causes are determined according to industry and workplace procedures.</p> <p>3.3. Rectification procedures are determined according to fault and type of finish material, industry standard</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>practices and workplace requirements.</p> <p>3.4. Identification of faults and rectification are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
<p>4. Rectify and touch up paint faults of solid (two component system) paint materials</p>	<p>4.1. Materials to restore paintwork to as-new condition are determined from industry and manufacturer/component supplier standards.</p> <p>4.2. Damaged paintwork is rectified to blend with existing paintwork on vehicle.</p> <p>4.3. All rectification operations are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>4.4. Paint faults are rectified without causing damage to any component or system.</p>
<p>5. Clean up work area and maintain equipment</p>	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Waste material is removed and disposed of or stored according to statutory and workplace procedures.</p> <p>5.3. Spray equipment is cleaned according to manufacturer/ component supplier and/or workplace policy and procedures.</p> <p>5.4. Work area is cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.6. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.7. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for applying solid acrylic enamel refinishing materials (two component system)
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to application of solid acrylic enamel refinishing materials, including the use of specialist equipments, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/substance disposal and storage requirements
- material safety data sheets
- types of solid acrylic enamel refinishing materials (two component system)
- paint surface fault identification and rectification procedures
- drying methods for solid acrylic enamel refinishing material (two component system)
- paint application methods
- types of spray guns
- spray gun operation (spraying techniques)
- spray gun cleaning methods
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- preparing solid acrylic enamel (two component system) paint
- applying solid acrylic enamel refinishing materials (two component system)
- identifying paint faults and determining rectification procedures
- rectifying paint faults
- applying environmental procedures.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to application of solid acrylic enamel refinishing materials
- equipment, hand and power tooling appropriate to application of solid acrylic enamel refinishing materials
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training

<b>EVIDENCE GUIDE</b>	
	<p>Package.</p> <ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Refinishing materials</b>	Refinishing materials include solid acrylic enamels, hardeners and reducers.
<b>Refinishing methods</b>	Refinishing methods include spray gun selection equipment protection methods, various spraying techniques, drying procedures, paint mixing,

<b>RANGE STATEMENT</b>	
	compound polishing and detailing of surfaces.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include various spray guns, air pressure regulators, air compressors,

RANGE STATEMENT	
	spray booths, baking ovens, heating and lighting systems, strainers, ford cup, measuring sticks and safety equipment.
<b>Materials</b>	Materials may include polishing buffs and pads, rags, tac rags, solvents, compounds, glazes and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to application of solid acrylic enamel refinishing materials</li><li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Paint
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## AURVTP3012 Apply air dry and polyurethane enamel refinishing materials

### Modification History

Release	Comment
Release 1	<p>Replaces AURV329603DA Apply air dry and polyurethane enamel refinishing materials</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to apply air dry and polyurethane enamel refinishing materials to a variety of vehicle substrates by spray gun application and determine causes and rectification procedures for paint finish faults.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, application of materials, the rectification of faults and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, material type, colour, quality and quantity.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, breathing apparatus and full body protection, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Identify paint faults, causes and rectification procedures	<p>2.1. Paint faults are identified according to industry and workplace procedures.</p> <p>2.2. Paint fault causes are determined according to industry and workplace procedures.</p> <p>2.3. Rectification procedures are determined according to fault and type of finish material according to industry standard practices and workplace requirements.</p> <p>2.4. Identification and determination activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Apply air dry and polyurethane enamel refinishing materials by spray gun	<p>3.1. The environment for application of refinishing materials conforms to requirements for temperature, extraction of fumes and cleanliness.</p> <p>3.2. Refinishing materials are applied at manufacturer/component supplier recommended intervals using approved methods.</p> <p>3.3. Refinishing materials are dried using approved methods and equipment.</p> <p>3.4. Refinishing materials are applied without causing damage to any component or system.</p> <p>3.5. The finish produced meets specifications for colour, texture, depth and gloss and is contaminant-free.</p> <p>3.6. Surface refinishing is completed within approved timeframes.</p> <p>3.7. Application activities are carried out according to industry regulations/guidelines, WHS legislation, and</p>

ELEMENT	PERFORMANCE CRITERIA
	enterprise procedures/policies.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste material is removed and disposed of or stored according to statutory and workplace procedure.</p> <p>4.3. Spray equipment is cleaned as specified by manufacturer/ component supplier and/or workplace policy and procedures.</p> <p>4.4. Work area is cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.6. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.7. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for applying air dry and polyurethane enamel refinishing materials
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to application of air dry and polyurethane enamel refinishing materials, including the use of specialist equipment, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/substance disposal and storage requirements
- material safety data sheets
- types of air dry and polyurethane enamel refinishing materials
- application methods
- paint surface fault identification and rectification procedures
- drying methods for air dry and polyurethane enamel refinishing material
- types of spray guns
- spray gun operation and spraying techniques
- spray gun cleaning methods
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- preparing air dry and polyurethane enamel paint
- applying a range of air dry and polyurethane enamel refinishing materials
- identifying paint faults and determining rectification faults
- rectifying faults
- applying environmental procedures.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards. The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to application of air dry and polyurethane enamel refinishing materials
- equipment, hand and power tooling appropriate to application of air dry and polyurethane enamel refinishing materials
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance together with application of underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Paint types**

Paint types are to include air dry synthetic enamels, enamel additives, two-pack polyurethane acrylic enamels, urethane additives and paint reducers.

**Methods**

Methods are to include:

- spray gun selection, various spraying

<b>RANGE STATEMENT</b>	
	<p>techniques, drying procedures, paint mixing</p> <ul style="list-style-type: none"> <li>• polishing and detailing of surfaces.</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include various spray guns, air pressure regulators, air compressors, spray booths, baking ovens, heating and lighting systems, strainers, masking equipment and safety equipment.
<b>Materials</b>	Materials may include rags, tac rags, cleaning solvents and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to application of air dry and polyurethane enamel refinishing materials</li><li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP3013 Prepare substrate for refinishing

### Modification History

Release	Comment
Release 1	Replaces AURV329649A Prepare substrate for refinishing Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to prepare substrates for refinishing. The preparation of plastic/composite materials for refinishing is not addressed in this unit.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal of surface rust/ scale, application of primers and sealers, the preparation of the surface for refinishing and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine the job requirements, including method and material type. 1.2. Job specifications are read and interpreted. 1.3. WHS requirements, including personal protection needs, are observed throughout the work. 1.4. Materials are selected and inspected for quality. 1.5. Hand, power tooling and safety equipment are identified and checked for operation. 1.6. Procedures are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Remove surface rust and scale and prepare body surfaces for application of primers	2.1. Surfaces to be painted are cleaned of contaminants. 2.2. Surfaces to be painted are prepared using approved methods, materials and equipment. 2.3. Surface preparation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies. 2.4. Work is completed without causing damage to any component or system. 2.5. Waste materials are disposed of in accordance with statutory and enterprise requirements.
3. Apply primers and/or sealers	3.1. Components and ancillary fittings that can be affected by application processes are protected and/or removed and stored safely. 3.2. Primers/primer surfaces are applied using approved methods, materials and equipment. 3.3. Application activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies. 3.4. Work is completed without causing damage to any component or system.
4. Prepare primed/sealed surface for refinishing	4.1. Surfaces to be refinished are prepared using approved methods, materials and equipment. 4.2. Preparation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies. 4.3. Work is completed without causing damage to any component or system.

ELEMENT	PERFORMANCE CRITERIA
	4.4. Waste materials are disposed of in accordance with statutory and enterprise requirements.
5. Clean up work area and maintain equipment	5.1. Material that can be reused is collected and stored. 5.2. Waste and scrap is removed following workplace procedures. 5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures. 5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures. 5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures. 5.6. Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for preparing substrate for refinishing
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to preparation of substrate for refinishing, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/substance disposal and storage
- material safety data sheets
- technical information/manufacture/component supplier specifications
- surface preparation procedures for primers/sealers (including minor dent/surface blemish repair)
- the types and uses of cleaning agents
- types of primers and sealers
- application methods of primers/fillers/sealers, including roller application
- operating procedure of equipment for surface preparation
- wet/dry rubbing procedures
- feather edging procedures
- primer/sealed surface preparation for refinishing
- work organisation and planning processes

**REQUIRED SKILLS AND KNOWLEDGE**

- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- preparing primed/sealed surface for refinishing to workplace and manufacturer/component supplier requirements.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to preparation of substrate for refinishing
- equipment, hand and power tooling appropriate to preparation of substrate for refinishing
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Substrate preparation methods</b>	Substrate preparation methods include abrasive blasting and/or sanding (wet and dry), masking, filling, spraying, rolling, application of refinishing material.
<b>Specific requirements</b>	Specific requirements may include in situ panels, doors, plastic components, fenders, boots and bonnets.
<b>Variables</b>	Other variables may include internal trim, external trim, plastics, glass fittings, mirrors, lights, accessory items, rubber seals, protective

<b>RANGE STATEMENT</b>	
	strips, decals and striping.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, air and power tooling, cleaning equipment, spray

<b>RANGE STATEMENT</b>	
	equipment and rollers.
<b>Materials</b>	Materials may include chemical cleaners, body fillers, primer fillers, body solder, abrasive papers, cleaning materials, masking materials, primers and etch primers.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to preparation of substrate for refinishing</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Paint
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## AURVTP3014 Apply multi-layer and clear over-base colour matching techniques

### Modification History

Release	Comment
Release 1	<p>Replaces AURV329803BA Apply multi layer/clear over base colour matching techniques</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to match multi layer/ clear over base colours.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, the mixing of colours, the preparation of colour test cards, the performance of visual matching tests and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine the job requirements, including method and material type.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</li><li>1.4. Materials are selected and inspected for quality.</li><li>1.5. Hand, power tooling and safety equipment are identified and checked for operation.</li><li>1.6. Procedures are determined to minimise waste material.</li><li>1.7. Procedures are identified for maximising energy efficiency while completing the job.</li></ul>
2. Mix multi-layer/clear over base paint colours	<ul style="list-style-type: none"><li>2.1. Mixing is performed using the appropriate method and/or system.</li><li>2.2. Mixing activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li><li>2.3. Multi-layer/clear over base paint colours are mixed without causing damage to any component or system.</li></ul>
3. Prepare colour test card and perform visual matching test	<ul style="list-style-type: none"><li>3.1. Test card is prepared in the prescribed manner, to enable a visual comparison between matched and original paints.</li><li>3.2. Visual matching tests are performed and findings noted.</li><li>3.3. Following matched and original paint comparison, paint is remixed for further matching prior to application.</li><li>3.4. Activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li></ul>
4. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>4.1. Material that can be reused is collected and stored.</li><li>4.2. Waste and scrap is removed following workplace procedure.</li><li>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</li><li>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</li><li>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</li><li>4.6. Tooling is maintained in accordance with workplace procedures.</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for multi layer/clear over base paint matching techniques
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to colour matching of multi-layer/clear over base colours, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements
- material safety data sheets
- paint mixing techniques/mixing machines and systems operation
- colour matching techniques relevant to multi layer/clear over base paint materials
- colour test cards and visual matching techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• applying paint mixing procedures</li> <li>• applying colour matching techniques for multi-layer/clear over base paint materials</li> <li>• preparing colour test cards</li> <li>• performing visual matching tests.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to colour matching of multi layer/clear over base colours</li> <li>• equipment, hand and power tooling appropriate to colour matching of multi-layer/clear over base colours</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and</li> </ul>

**EVIDENCE GUIDE**

	<p>accuracy of performance together with application of underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Matching methods**

Matching methods include application of spray gun techniques, various spraying techniques, drying procedures, paint mixing methods, paint straining methods, paint thinning methods.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include tinting machines, microfiche, scales, air operated agitators, hand paddles, mixing banks, spray gun stem strainers, funnel strainers, mesh strainers, nylon stocking weave, vacuum paint strainers, viscosity measuring equipment, high-volume low-pressure spray guns, gravity feed spray guns,

<b>RANGE STATEMENT</b>	
	suction feed spray guns, pressure regulators, air compressors, personal protective equipment, spray booths, baking ovens, heating and lighting systems, polishing and cleaning equipment, safety equipment and metal/cardboard test cards.
<b>Materials</b>	Materials may include acrylic lacquers, air dry synthetic enamels, two-pack urethane acrylic enamels, metallic two pack enamels, clear acrylic lacquers, metallic acrylic lacquers, pearl finishes, water-based finishes, paint thinners, paint reducers and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to colour matching of multi layer/clear over base colours</li><li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Paint
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## AURVTP3015 Apply solid colour matching techniques

### Modification History

Release	Comment
Release 1	<p>Replaces AURV329803CA Apply solid colour matching techniques</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to match solid colours.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, mixing of colours, preparation of colour test cards, performance of visual testing and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine the job requirements, including method and material type. 1.2. Job specifications are read and interpreted. 1.3. WHS requirements, including personal protection needs, are observed throughout the work. 1.4. Materials are selected and inspected for quality. 1.5. Hand and power tooling and safety equipment are identified and checked for operation. 1.6. Procedures are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Mix solid paint colours	2.1. Mixing is performed using appropriate method and/or system. 2.2. Mixing activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies. 2.3. Solid paint colours are mixed without causing damage to any component or system.
3. Prepare colour test card and perform visual matching test	3.1. Test card prepared in the prescribed manner, to enable a visual comparison between matched and original paints. 3.2. Visual matching tests are performed and findings noted. 3.3. Following matched and original paint comparison, paint is remixed for further matching, prior to application. 3.4. Activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored. 4.2. Waste and scrap is removed following workplace procedure. 4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures. 4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures. 4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications

ELEMENT	PERFORMANCE CRITERIA
	and worksite procedures. 4.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for solid colour matching techniques
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to matching of solid colours, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements
- material safety data sheets
- paint mixing techniques/mixing machines and systems operation
- colour matching techniques relevant to solid paint materials
- colour test cards and visual matching techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying paint mixing procedures
- applying colour matching techniques for solid paint materials
- preparing colour test cards
- applying colour matching techniques for a range of solid paint materials.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to matching of solid colours
- equipment, hand and power tooling appropriate to matching of solid colours
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include spray gun techniques, various spraying techniques, drying procedures, paint mixing methods, paint straining methods, paint thinning methods and colour test card preparation.

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include tinting machines, microfiche, scales, air operated agitators, hand paddles, mixing banks, spray gun

<b>RANGE STATEMENT</b>	
	stem strainers, funnel strainers, mesh strainers, nylon stocking weave, vacuum paint strainers, viscosity measuring equipment, high-volume low-pressure spray guns, gravity feed spray guns, suction feed spray guns, pressure regulators, air compressors, personal protective equipment, spray booths, baking ovens, heating and lighting systems, polishing and cleaning equipment, safety equipment and metal/cardboard test cards.
<b>Materials</b>	Materials may include acrylic lacquers, air dry synthetic enamels, two-pack urethane acrylic enamels, metallic two-pack enamels, clear acrylic lacquers, metallic acrylic lacquers, pearl finishes, water-based finishes, paint thinners, paint reducers and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to matching of solid colours</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP3016 Carry out paint rectification and touch-up work for solids using two component systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURV329903AA Carry out paint rectification and touch up work for solids (two component system)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to rectify and touch up solid (two component system) paint material faults.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, identification of rectification/touch up requirements, rectification and touch up of paint faults and completion of work finalisation processes including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements including method and material type.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for correct operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Determine paint fault cause and rectification requirements for solid (two component system) paint materials	<p>2.1. Cause of paint fault is determined from available information to provide background for report/repair.</p> <p>2.2. Visual inspection of vehicle is undertaken to determine the extent of damage and areas requiring repair/rework.</p> <p>2.3. Damage to paintwork is assessed from visual comparison with undamaged paintwork.</p> <p>2.4. Determinations are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>2.5. Paint faults cause and rectification requirements are determined without causing undue damage to any component or system.</p>
3. Rectify and touch up paint faults of solid (two component system) paint materials	<p>3.1. Materials required to restore paintwork to "as new" condition are determined from industry and manufacturer/ component supplier.</p> <p>3.2. Damaged paintwork is rectified to blend with existing paintwork on vehicle.</p> <p>3.3. Rectification operations are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>3.4. Paint faults are rectified without causing damage to any component or system.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for solid (two component system) paint rectification and touch up work
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the documenting of work outcomes and problems
- plan and organise activities including preparation and layout of worksite and the obtaining of equipment and materials to avoid any backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to the rectification and touch up of solid (two component system) including, the use of specialist tooling and equipment, measuring equipment, and communication devices, and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- relevant WHS regulations/requirements, equipment, material and personal safety requirements
- relevant environmental protection requirements/substance disposal and storage
- material safety data sheets
- paint surface fault identification and rectification procedures for solid (two component system) paint materials
- touch up techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others in associated areas</li> <li>• selecting methods and techniques which are appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• applying environmental procedures</li> <li>• preparing paint</li> <li>• determining and rectifying paint fault for solid (two component system) paint materials.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to the rectification and touch up of solid (two component system) paintwork</li> <li>• equipment and hand and power tooling appropriate to the rectification and touch up of solid (two component system) paintwork</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> </ul>

## EVIDENCE GUIDE

	<ul style="list-style-type: none"> <li>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>Assessment may be applied under project related conditions and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods include:

- spray gun selection, various spraying techniques, drying procedures and paint mixing
- safe work procedures.

#### Specific requirements

Specific requirements may include personal safety protection and equipment.

<b>RANGE STATEMENT</b>	
<b>Variables</b>	Other variables may include compound polishing and detailing of repaired surfaces.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting and working in proximity to others and site visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to, emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include but not be limited to regulations including, Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include various spray guns, air pressure regulators, air compressors, spray booths, baking ovens, heating and lighting systems, strainers, measuring sticks, ford cup and safety equipment.
<b>Materials</b>	Materials may include solid acrylic enamel paint, hardeners and reduces, polishing buffs and pads, rags, tac rags cleaning solvents, compounds and glazes, and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions, fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets and diagrams or sketches</li> <li>• safe work procedures related to the rectification and touch up of solid (two component system) paintwork</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external personnel</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Paint
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## AURVTP3017 Carry out paint rectification and touch-up work for clear over base using two component systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURV329903BA Carry out paint rectification and touch up work for clear over base (two component system)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to rectify and touch up clear over base (two component system) paint material faults.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, identification of rectification and touch up requirements, rectification and touch up of faults and completion of work finalisation processes including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements including method and material type.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for correct operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Determine paint fault cause and rectification requirements for clear over base (two component system) paint materials	<p>2.1. Cause of paint fault is determined from available information to provide background for report/repair.</p> <p>2.2. Visual inspection of vehicle is undertaken to determine the extent of damage and areas requiring repair/rework.</p> <p>2.3. Damage to paintwork is assessed from visual comparison with undamaged paintwork.</p> <p>2.4. Determinations are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>2.5. Paint faults cause and rectification requirements are determined without causing undue damage to any component or system.</p>
3. Rectify and touch up paint faults of clear over base (two component system) paint materials	<p>3.1. Materials required to restore paintwork to "as new" condition are determined from industry and manufacturer/ component supplier.</p> <p>3.2. Damaged paintwork is rectified to blend with existing paintwork on vehicle.</p> <p>3.3. All rectification operations are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>3.4. Paint faults are rectified without causing damage to any component or system.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for clear over base (two component system) paint rectification and touch up work
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities including, preparation and layout of worksite and the obtaining of equipment and materials to avoid any backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the rectification and touch up of clear over base (two component system) paintwork including the use of specialist tooling and equipment, measuring equipment, computerised technology, and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/substance disposal and storage
- material safety data sheets
- paint surface fault identification and rectification procedures for clear over base (two component system) paint materials
- touch up techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others in associated areas</li> <li>• selecting methods and techniques which are appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• preparing paint</li> <li>• determining and rectifying of paint fault of clear over base (two component system) paint materials</li> <li>• applying environmental procedures.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to the rectification and touch up of clear over base (two component system) paintwork</li> <li>• equipment and hand and power tooling appropriate to the rectification and touch up of clear over base (two component system) paintwork</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> </ul>

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>• spray gun selection, various spraying techniques, drying procedures and paint mixing</li> <li>• safe work procedures.</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements may include personal safety protection and equipment.</p>

<b>RANGE STATEMENT</b>	
<b>Variables</b>	Other variables may include compound polishing and detailing of repaired surfaces.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting and working in proximity to others and site visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/ Territory and local authorities administering acts, regulations and codes of practice.

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include various spray guns, air pressure regulators, air compressors, spray booths, baking ovens, heating and lighting systems, strainers, measuring sticks and ford cup.
<b>Materials</b>	Materials may include polishing buffs and pads, tac rags, acrylic enamel base coats, acrylic enamel clear, hardeners and reducers, cleaning solvents, compounds and hardeners and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the rectification and touch up of clear over base (two component system) paint work</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external personnel</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Paint
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## AURVTP3018 Carry out paint rectification for multi-layer and pearl using two component system

### Modification History

Release	Comment
Release 1	<p>Replaces AURV329903CA Carry out paint rectification and touch up work for multi layer/pearl (two component system)</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to rectify and touch up multi layer/pearl (two component system) paint material faults.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes the identification and confirmation of work requirement, preparation for work, identification of rectification/touch up requirements, rectification and touch up of faults and completion of work finalisation processes including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements including method and material type.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand and power tooling, and safety equipment are identified and checked for correct operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Determine paint fault cause and rectification requirements for multi-layer/pearl (two component system) paint materials	<p>2.1. Cause of paint fault is determined from available information to provide background for report/repair.</p> <p>2.2. Visual inspection of vehicle is undertaken to determine the extent of damage and areas requiring repair/rework.</p> <p>2.3. Damage to paintwork is assessed from visual comparison with undamaged paintwork.</p> <p>2.4. Determinations are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>2.5. Paint faults cause and rectification requirements are determined without causing undue damage to any component or system.</p>
3. Rectify and touch up paint faults of multi-layer/pearl (two component system) paint materials	<p>3.1. Materials required to restore paintwork to "as new" condition are determined from industry and manufacturer/ component supplier.</p> <p>3.2. Damaged paintwork is rectified to blend with existing paintwork on vehicle.</p> <p>3.3. Rectification operations are carried out according to industry regulations/guidelines, WHS legislation, statutory legislation and enterprise procedures/policies.</p> <p>3.4. Paint faults are rectified without causing damage to any component or system.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for multi layer pearl (two component system) paint rectification and touch up work
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities including preparation and layout of worksite and the obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the rectification and touch up of multi-layer/pearl (two component system) paintwork including the use of specialist tooling and equipment, measuring equipment, and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/substance disposal and storage
- material safety data sheets
- paint surface fault identification and rectification procedures for multi-layer/pearl (two component system) paint materials
- touch up techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others in associated areas</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• applying environmental procedures</li> <li>• preparing paint</li> <li>• determining and rectifying paint fault for multi-layer/pearl (two component system) paint materials.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to the rectification and touch up of multi-layer/pearl (two component system) paintwork</li> <li>• equipment and hand and power tooling appropriate to the rectification and touch up of multi-layer/pearl (two component system) paintwork</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> </ul>

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Methods</b>	<p>Methods include:</p> <ul style="list-style-type: none"> <li>• spray gun selection, various spraying techniques, drying procedures and paint mixing</li> <li>• safe work procedures.</li> </ul>
<b>Specific requirements</b>	<p>Specific requirements may include personal safety protection and equipment.</p>

<b>RANGE STATEMENT</b>	
<b>Variables</b>	Other variables may include compound polishing and detailing of repaired surfaces.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, and working in proximity to others and site visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/ Territory and local authorities administering acts, regulations and codes of practice.

<b>RANGE STATEMENT</b>	
<b>Tooling and equipment</b>	Tooling and equipment may include various spray guns, air pressure regulators, air compressors, spray booths, baking ovens, heating and lighting systems, strainers, measuring sticks and ford cup.
<b>Materials</b>	Materials may include acrylic enamel, multi layer/pearls, two pack base coats, acrylic enamel clear, hardeners and reducers, tac rags, polishing buffs and pads, cleaning solvents, compounds and glazes and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to the rectification and touch up of multi layer/pearl (two component system) paintwork</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external personnel</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Trimming and Upholstery
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## AURVTP3019 Prepare and paint plastic components

### Modification History

Release	Comment
Release 1	Replaces AURV330149A Prepare and paint plastic components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to prepare and apply refinishing materials to plastic surfaces.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, preparation of plastic surfaces, selection, application and drying of finishing material and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine the job requirements, including method and material type. 1.2. Job specifications are read and interpreted. 1.3. WHS requirements, including personal protection needs, are observed throughout the work. 1.4. Materials are selected and inspected for quality. 1.5. Hand, power tooling and safety equipment are identified and checked for operation. 1.6. Procedures are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Prepare plastic surfaces for refinishing	2.1. Environment for preparation of plastic surfaces conforms to requirements for temperature, extraction of fumes and cleanliness. 2.2. Preparation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies. 2.3. Preparation is completed without causing damage to any component or system. 2.4. Waste materials are disposed of and/or stored in accordance with statutory and enterprise requirements.
3. Apply refinishing materials to plastic surfaces	3.1. Environment for application of refinishing materials conforms to requirements for temperature, extraction of fumes and cleanliness. 3.2. Surfaces are prepared and refinishing materials are applied at manufacturer/component supplier recommended intervals using approved methods. 3.3. Refinishing materials are dried using approved methods and equipment. 3.4. Finish produced meets application specifications for colour, texture, depth and gloss and is contaminant-free blending into surrounding surfaces. 3.5. Refinishing material application is completed without causing damage to any component or system. 3.6. Application activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies. 3.7. Waste materials are disposed of and/or stored in

ELEMENT	PERFORMANCE CRITERIA
	accordance with statutory and enterprise requirements.
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for preparation and painting of plastic components
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to preparation and painting of plastic components, including the use of specialist tooling and equipment, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/storage and disposal requirements
- material safety data sheets
- surface preparation methods
- types of paints
- application methods, including spray and roller methods
- types of spray guns and maintenance requirements
- spray gun/roller techniques
- paint drying methods and procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying environmental procedures for preparing paint
- preparing and painting plastic components.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to preparation and painting of plastic components
- equipment, hand and power tooling appropriate to preparation and painting of plastic components
- activities covering mandatory task requirements
- specifications and work instructions including Australian Standards.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Preparation**

Preparation includes application of anti-static cleaning agents.

**Application methods**

Application methods include spray gun techniques, various spraying techniques, drying procedures, paint mixing and polishing and detailing of brushed surfaces.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace

<b>RANGE STATEMENT</b>	
	environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include various spray guns, air pressure regulators, air compressors, spray booths, baking ovens, heating and lighting systems, and safety equipment.
<b>Materials</b>	Materials may include acrylic lacquers, air dry synthetic enamels, two-pack urethane acrylic enamels, metallic two-pack enamels, clear acrylic lacquers, metallic acrylic lacquers, pearl finishes,

<b>RANGE STATEMENT</b>	
	water-based finishes, paint thinners, paint reducers and cleaning materials, plastic primers, anti-static cleaning agents.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to preparation and painting of plastic components</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Paint
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## AURVTP3020 Carry out denibbing, buffing and polishing

### Modification History

Release	Comment
Release 1	<p>Replaces AURV330508A Carry out denibbing, buffing and polishing</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out denibbing, buffing and polishing procedures on a range of vehicle body refinishing materials.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, denibbing, buffing, polishing and completion of work finalisation processes, including clean-up and documentation.</p> <p>This competence unit applies to application of body refinishing materials and solid and liquid compositions.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method and material type.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Denib work	<p>2.1. Surface materials and finish requirements are identified.</p> <p>2.2. Hazards are identified.</p> <p>2.3. Denibbing heads are installed and set-up according to enterprise procedures.</p> <p>2.4. Job surface is finished to enterprise requirements.</p> <p>2.5. All denibbing procedures are completed within recognised enterprise guidelines.</p> <p>2.6. Work is denibbed without causing damage to any component or system.</p> <p>2.7. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Buff work	<p>3.1. Surface materials and finish requirements are identified.</p> <p>3.2. Hazards are identified.</p> <p>3.3. Buffing heads are installed and set-up according to enterprise procedures.</p> <p>3.4. Job surface is finished to enterprise requirements.</p> <p>3.5. All finishing procedures are completed within recognised enterprise guidelines.</p> <p>3.6. Work is buffed without causing damage to any component or system.</p> <p>3.7. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Polish work	<p>4.1. Surface materials and finish requirements are</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>identified.</p> <p>4.2.Hazards are identified.</p> <p>4.3.Polishing heads are installed and set-up according to enterprise procedures.</p> <p>4.4.Job surface is finished to enterprise requirements.</p> <p>4.5.All finishing procedures are completed within recognised enterprise guidelines.</p> <p>4.6.Work is polished without causing damage to any component or system.</p> <p>4.7.All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap is removed following workplace procedure.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for denibbing, buffing and polishing vehicle paint work
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to denibbing, buffing and polishing of refinishing materials, including the use of specialist tooling and materials, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- processes to treat work
- identification of surface materials and finish requirements
- application of denibbing buffing and polishing equipment
- operating procedures for denibbing, buffing and polishing equipment
- denibbing, buffing and polishing procedures and techniques
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- denibbing painted surfaces without causing damage to equipment or injury to persons
- buffing painted surfaces without causing damage to equipment or injury to persons
- polishing painted surfaces without causing damage to equipment or injury to persons
- achieving painted surface finish outcome.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to denibbing, buffing and polishing of refinishing materials
- equipment, hand and power tooling appropriate to denibbing, buffing and polishing of refinishing materials
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods are to include underhand and overhand techniques hand and machine grinding, denibbing, buffing and polishing.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include power tooling, including flexible drive appliances
<b>Materials</b>	Materials may include polishes, felt wheels, fabric mops and cleaning materials.

RANGE STATEMENT	
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to denibbing, buffing and polishing of refinishing materials</li><li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Paint
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## AURVTP3021 Restore vehicle exterior paint

### Modification History

Release	Comment
Release 1	Replaces AURV331987A Restore vehicle exterior paint Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out vehicle body exterior paint restoration activities.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and identification of faults, selection of restoration method, restoration of paint work and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the work requirements, including method, materials and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Inspect and identify paint faults and determine restoration procedure	<p>2.1. Inspection, identification and determination of procedures are completed without causing further damage to paint or components.</p> <p>2.2. Inspection and identification procedures are carried out according to workplace methods and procedures.</p> <p>2.3. Restoration process is determined according to type of damage, paint type and finish, workplace and industry/ product manufacturer/component supplier prescribed methods and procedures.</p>
3. Restore vehicle body exterior finishing material	<p>3.1. Equipment is selected and used according to workplace methods and customer requirements.</p> <p>3.2. Restoration materials are selected according to type of damage and type of finishing material, workplace methods and paint manufacturer/component supplier recommendations.</p> <p>3.3. Vehicle body exterior finish is restored according to industry standards/regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>3.4. Restoration is completed without causing damage to any component or system.</p> <p>3.5. Materials are used and stored according to manufacturer/ component supplier recommendations and regulatory requirement.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste material is removed following workplace and environmental procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for vehicle paint restoration
- identifying safety precautions
- identifying recommended applications and procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- reading and interpreting product labels/directions
- listening and following verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for measuring and mixing restoration materials
- use workplace technology related to restoration of vehicle external paintwork, including the use of painting equipment, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- restoration agents and their recommended applications
- types of body paint surfaces and finishing materials
- types of vehicle body exterior finishing material faults, including colour change, surface variations, rework, pitting
- finishing material restoration procedures
- environmental requirements for storage, handling and disposal of substances
- material safety data sheets
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- selecting and using materials and equipment
- restoring of vehicle body exterior finish to specification
- completing workplace records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to restoration of vehicle external paintwork
- equipment, hand and power tooling appropriate to restoration of vehicle external paintwork
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include manual or machine assisted restoration methods.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include tooling and equipment to restore vehicle body external finish.
<b>Materials</b>	Materials may include restoration agents, vehicle/paint manufacturer/component supplier specifications and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and

**RANGE STATEMENT**

	paggers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to restoration of vehicle external paintwork</li><li>• regulatory/legislative requirements pertaining to the use of paints</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP3022 Carry out custom painting techniques

### Modification History

Release	Comment
Release 1	Replaces AURV332308A Carry out custom painting techniques Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out custom painting techniques on a variety of substrates and apply relevant clear or tinted top coat refinishing materials by spray gun application.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, application of materials, the rectification of faults and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, material type, colour, quality and quantity.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, breathing apparatus and full body protection, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand tooling and safety equipment are identified and checked for operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Prepare substrate for the application of custom finishes.</p> <p>1.8. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Apply mediums to paint surfaces to create a variety of different visual effects	<p>2.1. Substrates, backgrounds, materials and equipment used for creation of a range of visual effects are identified.</p> <p>2.2. Appropriate colour combinations and effects for pictorial reproduction mediums and equipment to produce various painting techniques are selected.</p> <p>2.3. Accurate visual texture, light and shade on given subject matter is achieved.</p> <p>2.4. Appropriate colours to replicate the given subject, achieving correct tones and tonal order are selected and applied.</p> <p>2.5. Lines, shapes, patterns and illustrations are produced using freehand techniques with the assistance of shields, templates or stencils.</p> <p>2.6. Appropriate backgrounds, colour combinations and the effectiveness of colours are identified and produced.</p> <p>2.7. Application of special effects to given illustrations/graphics are performed, including:</p> <p>2.7.1. highlighting, reflection, and transparency techniques</p> <p>2.7.2. texture simulations</p> <p>2.7.3. metal, stone, and liquid simulations</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>2.7.4. 3D effects, to create visual realism</p> <p>2.7.5. tribal/Indigenous art styles</p> <p>2.7.6. correct application of colour layering processes.</p> <p>2.8. Application of paint mediums to surfaces is carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Prepare a substrate ready to accept a clear top coat	<p>3.1. Correct abrasives to carry out substrate preparation for clear top coat finishes are identified and selected.</p> <p>3.2. Correct cleaning and drying procedures in relation to sludge removal is carried out.</p> <p>3.3. Preparation of the surface to accept clear top coats using solvent cleaners and tack rags is carried out.</p> <p>3.4. Surface preparation activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Apply clear top coat refinishing materials by spray gun	<p>4.1. Refinishing materials are applied without causing damage to any component or system.</p> <p>4.2. The finish produced meets specifications for; texture, depth and gloss and is contaminant-free.</p> <p>4.3. Application activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
5. Rectify and touch up paint faults of clear over base multi layer refinishing materials	<p>5.1. Materials to restore paintwork to as new condition are determined from industry and manufacturer/component supplier standards.</p> <p>5.2. Damaged paintwork is rectified to blend with existing paintwork.</p> <p>5.3. Paint film surface faults are removed using compounds, polishes and glazes.</p> <p>5.4. Paint faults are rectified without causing damage to any component or system.</p> <p>5.5. All rectification operations are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
6. Clean up work area and maintain equipment	<p>6.1. Material that can be reused is collected and stored.</p> <p>6.2. Waste material is removed and disposed of or stored according to statutory and workplace procedure.</p> <p>6.3. Spray equipment is cleaned as specified by manufacturer/ component supplier and/or workplace policy and procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>6.4. Work area is cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>6.5. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>6.6. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>6.7. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for vehicle paint restoration
- identifying safety precautions
- identifying recommended applications and procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- reading and interpreting product labels/directions
- listening and following verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for measuring and mixing restoration materials
- use workplace technology related to custom painting, including the use of painting equipment, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental protection requirements/substance disposal and storage requirements
- material safety data sheets
- types of paints used for custom painting
- types of clear coat refinishing materials
- application methods
- pictorial reproduction
- special effects tools and techniques
- types of spray guns
- spray gun operation (spraying techniques)

**REQUIRED SKILLS AND KNOWLEDGE**

- spray gun cleaning methods
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- preparing a surface ready to accept colour coats
- demonstrating custom painting techniques including pictorial reproduction, highlighting, special effects
- preparing surfaces in readiness for clear top coat paint refinishing materials
- applying clear and coloured top coat refinishing materials
- rectifying paint faults
- applying environmental procedures.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials required for the application of graphic designs
- clear top coat refinishing materials
- equipment, hand and power tooling appropriate to application of refinishing materials

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>

<b>RANGE STATEMENT</b>	
<b>Fundamental custom graphic techniques</b>	Fundamental custom graphic techniques include pictorial reproduction, highlighting, reflective, and transparency techniques, texture simulation, metal, stone, and liquid simulations, highlighting techniques, leather simulation, chrome simulation, marbling and the use of tinted clears.
<b>Refinishing materials</b>	Refinishing materials may include acrylic enamel, acrylic lacquer, waterborne paints, acrylic enamel hardeners and reducers.
<b>Refinishing methods</b>	Refinishing methods include spray gun selection equipment protection methods, various spraying techniques, drying procedures, paint mixing, compound polishing and detailing of surfaces.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and

<b>RANGE STATEMENT</b>	
	clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include various air brushes, spray guns, air pressure regulators, air compressors, spray booths, baking ovens, heating and lighting systems, strainers, measuring sticks, specialised custom painting tools/equipment and safety equipment.
<b>Materials</b>	Materials may include templates, stencils, masking medium, tac rags, water-based and solvent-based paints, polishing buffs and pads, cleaning solvents, compounds, glazes and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to application of colour and clear coat refinishing materials</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>requirements</li><li>instructions issued by authorised enterprise or external persons</li><li>Australian Standards.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Paint
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## AURVTP3023 Mix and apply clear over-base refinishing materials in two-component systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURV329603CA Apply clear over base refinishing materials (two component system)</p> <p>Elements and Performance Criteria updated to reflect mixing of paint products</p>

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to mix and apply clear over-base refinishing materials in two-component systems to a variety of vehicle bodies and substrates by spray-gun application.</p> <p>The unit involves determining causes of paint finish faults and suitable rectification procedures. The unit also involves preparing for work and completing work finalisation processes, including clean-up and workplace documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to refinishing technicians in a repair environment and the application of clear over-base materials to a range of vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions and workplace <b>communications</b> are used to determine job requirements, including material type, colour, quality and quantity</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b>, including <b>personal protective equipment (PPE)</b> needs, breathing apparatus and full body protection, are observed throughout the work</p> <p>1.3. <b>Refinishing materials</b> are selected and inspected for quality</p> <p>1.4. Refinishing <b>tools and equipment</b>, including safety equipment, are identified and checked for correct operation</p> <p>1.5. <b>Refinishing methods</b> are determined to minimise waste material</p> <p>1.6. Painting procedures are identified to maximise energy efficiency while completing the job</p> <p>1.7. Workplace <b>emergency procedures</b> are identified and followed when required</p>
2. Mix clear over-base paint colours	<p>2.1. Mixing is performed according to paint manufacturer recommended specifications</p> <p>2.2. Mixing activities are carried out according to <b>environmental requirements</b>; industry, <b>statutory and regulatory authorities' guidelines</b>; WHS legislation; and workplace <b>safe operating procedures</b> and policies</p> <p>2.3. Clear over-base paints are mixed without causing damage to other components or systems</p>
3. Apply clear over-base refinishing materials by spray-gun	<p>3.1. Refinishing materials are applied using <b>processes</b> and <b>information</b> from the paint supplier and their recommended methods</p> <p>3.2. Refinishing materials are dried using approved methods and equipment</p> <p>3.3. Techniques are used that ensure that finish produced meets specifications for colour, texture, depth and gloss and is contaminant-free, blending into the surrounding surfaces</p> <p>3.4. Surface refinishing is completed within approved time frames</p> <p>3.5. Application activities are carried out according to industry regulations and guidelines, WHS legislation, and workplace policies and procedures</p>
4. Rectify paint faults	<p>4.1. Paint faults are identified according to industry and workplace procedures</p> <p>4.2. Paint fault causes are determined according to industry and</p>

	<p>workplace procedures</p> <p>4.3.Paint surface faults are removed using compounds, polishes and glazes</p> <p>4.4.Rectification procedures are determined according to industry standard and workplace quality requirements</p>
5. Rectify and touch up paint faults of clear over-base refinishing materials	<p>5.1.<b>Materials</b> to restore paintwork to as new condition are determined from industry and paint manufacturer supplier standards</p> <p>5.2.Damaged paintwork is rectified to blend with existing paintwork <b>quality</b> on vehicle</p> <p>5.3.Rectification operations are carried out according to industry regulations and guidelines, WHS legislation, and workplace policies and procedures; and without causing damage to components or systems</p>
6. Clean up work area and maintain equipment	<p>6.1.Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>6.2.Waste materials are removed and disposed of or stored according to statutory and workplace procedures</p> <p>6.3.Spray equipment is cleaned according to manufacturer and component supplier and workplace policies and procedures</p> <p>6.4.Work area is cleaned and inspected for serviceable condition according to workplace procedures</p> <p>6.5.Faulty equipment is identified and tagged according to workplace procedures</p> <p>6.6.Operator maintenance is completed according to manufacturer and component supplier specifications and workplace procedures</p> <p>6.7.Tools are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record measurements
  - document required paint and consumable parts
- numeracy skills to calculate paint quantity, mixing ratios and drying times
- planning and organising skills to:
  - plan, use and follow job specifications when mixing and applying clear over-base refinishing materials to components
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate clear over-base refinishing materials and equipment, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as codes of practice or original equipment manufacturer (OEM) repair procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use paint workplace tools and equipment relating to refinishing vehicles or components
- technology skills to:
  - operate vehicle painting and refinishing equipment
  - use technology to collect paint product information

#### Required knowledge

- WHS regulations, requirements, equipment and material relating to mixing and applying

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- clear over-base refinishing materials, including personal safety requirements
- environmental protection requirements, and substance disposal and storage requirements
- material safety data sheets (MSDS)
- types of clear over-base refinishing materials in two-component systems
- mixing methods
- application methods
- paint surface fault identification and rectification procedures
- drying methods for clear over-base refinishing material in two-component systems
- types of spray-guns
- spray-gun operation procedures and spraying techniques
- spray-gun cleaning methods
- work organisation and planning processes
- workplace quality processes

## Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• prepare clear over-base paint in two-component systems</li> <li>• apply clear over-base refinishing materials in two-component systems</li> <li>• identify paint faults and determine rectification procedures</li> <li>• rectify paint faults</li> <li>• apply environmental procedures.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to application of clear over-base refinishing materials</li> <li>• equipment, hand and power tools appropriate to application of</li> </ul>

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- clear over-base refinishing materials
- specifications and work instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Communications</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal instructions</li> <li>• visual instructions</li> <li>• worksite-specific instructions</li> <li>• written instructions</li> <li>• job and task sheets</li> <li>• telephones.</li> </ul>
<b><i>WHS</i></b> requirements:	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice and policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul> </li> </ul>
<b><i>Personal protective equipment:</i></b>	<ul style="list-style-type: none"> <li>• is that prescribed under legislation, regulations, codes of practice, and workplace policies and practices</li> <li>• may include: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• personal protective clothing</li> <li>• gloves</li> <li>• respirators</li> <li>• safety shoes</li> <li>• air feed mask.</li> </ul> </li> </ul>
<b><i>Refinishing materials</i></b> may include:	<ul style="list-style-type: none"> <li>• solid, metallic, pearl two-pack base coat</li> <li>• clear two-pack acyclic enamel</li> <li>• hardener</li> <li>• paint reducer.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• air pressure regulators</li> <li>• air compressors</li> <li>• spray booths</li> <li>• baking ovens</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• heating and lighting systems</li> <li>• strainers</li> <li>• measuring sticks</li> <li>• ford cups</li> <li>• safety equipment</li> <li>• tinting machines</li> <li>• hand paddles</li> <li>• nylon stocking weave</li> <li>• viscosity measuring equipment</li> <li>• high-volume low-pressure spray-guns</li> <li>• gravity feed spray-guns</li> <li>• suction feed spray-guns</li> <li>• personal protective equipment</li> <li>• polishing and cleaning equipment.</li> </ul>
<b><i>Refinishing methods</i></b> may include:	<ul style="list-style-type: none"> <li>• spray-gun selection</li> <li>• equipment protection methods</li> <li>• various spraying techniques</li> <li>• drying procedures</li> <li>• paint mixing</li> <li>• compound polishing</li> <li>• detailing of surfaces.</li> </ul>
<b><i>Emergency procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• emergency shutdown</li> <li>• extinguishing fires</li> <li>• workplace first aid requirements</li> <li>• workplace evacuation.</li> </ul>
<b><i>Environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• waste management</li> <li>• noise control</li> <li>• dust control</li> <li>• clean-up management.</li> </ul>
<b><i>Statutory and regulatory authority guidelines</i></b> may include:	<ul style="list-style-type: none"> <li>• statutory and regulatory regulations</li> <li>• industry codes of practice.</li> </ul>
<b><i>Safe operating procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace safety policies and procedures</li> <li>• operational risk assessment</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> <li>• workplace visitors.</li> </ul>
<b><i>Application processes</i></b> must:	<ul style="list-style-type: none"> <li>• conform to: <ul style="list-style-type: none"> <li>• temperature</li> <li>• extraction of fumes</li> <li>• cleanliness requirements</li> </ul> </li> <li>• not cause damage to other components or systems.</li> </ul>
<b><i>Information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal and written information</li> <li>• graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• MSDS</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to colour matching of multi-layer and clear over-base colours</li> <li>• regulatory and legislative requirements</li> <li>• automotive painting and finishing code of practice</li> <li>• engineer's design specifications</li> <li>• workplace work specifications</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards.</li> </ul>
<b><i>Materials</i></b> may include:	<ul style="list-style-type: none"> <li>• polishing buffs and pads</li> <li>• tac-rags</li> <li>• cleaning solvents</li> <li>• polishes and glazes</li> <li>• compounds and cleaning materials</li> <li>• two-pack urethane acrylic enamels</li> <li>• clear acrylic lacquers</li> <li>• paint thinners</li> <li>• paint reducers</li> </ul>

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• cleaning materials.</li> </ul>
<i>Quality</i> may include:	<ul style="list-style-type: none"> <li>• industry standards</li> <li>• workplace standards</li> <li>• Australian standards</li> <li>• quality policy</li> <li>• workplace operations and procedures.</li> </ul>

## Unit Sector(s)

Competency field	Vehicle Body
Unit sector	Technical – Paint

## Custom Content Section

Not applicable.

## AURVTP3024 Mix and apply clear over-base multi-layer pearl refinishing materials

### Modification History

Release	Comment
Release 1	Replaces AURV329603EA Apply clear over base multi layer/pearl refinishing materials  Elements and Performance Criteria updated to reflect mixing of paint products

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to mix and apply clear over-base multi-layer pearl refinishing materials to a variety of vehicle substrates by spray-gun application. It also involves determining the causes of paint finish faults and rectifying them.</p> <p>The unit involves preparing for work and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to refinishing technicians in a repair environment who apply clear over-base pearl materials to a range of vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions and workplace <b>communications</b> are used to determine job requirements, including material type, colour, quality and quantity</p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b>, including <b>personal protective equipment (PPE)</b> needs, are identified, checked and observed</p> <p>1.3. <b>Refinishing materials</b> are selected and inspected for quality</p> <p>1.4. Refinishing <b>tools and equipment</b> are identified and checked for operation</p> <p>1.5. <b>Refinishing methods</b> are determined to minimise waste and maximise energy efficiency while completing the job</p> <p>1.6. Workplace <b>emergency procedures</b> are identified and followed when required</p>
2. Mix clear over-base multi-layer pearl refinishing materials	<p>2.1. Materials are mixed using the appropriate method</p> <p>2.2. Mixing activities are carried out according to <b>environmental requirements</b>; industry, <b>statutory and regulatory authority guidelines</b>; WHS legislation; and workplace <b>safe operating policies and procedures</b></p> <p>2.3. Clear over-base multi-layer pearl paint colours are mixed without causing damage to components or systems</p>
3. Apply clear over-base multi-layer pearl refinishing materials by spray-gun	<p>3.1. <b>Requirements for environment</b> for applying refinishing materials are identified and observed</p> <p>3.2. Refinishing materials are applied using <b>recommended methods</b> and intervals, in line with <b>information and documents</b> from paint manufacturer and component supplier, and without causing damage to components or systems</p> <p>3.3. Refinishing materials are dried using approved methods and equipment</p> <p>3.4. Paint surface faults are removed using compounds, polishes and glazes</p> <p>3.5. Finish is completed that meets <b>specifications</b></p> <p>3.6. Surface refinishing is completed within approved time frames</p>
4. Identify and rectify paint faults	<p>4.1. Paint faults are identified according to industry and workplace procedures</p> <p>4.2. Paint fault causes are determined according to industry and workplace procedures</p> <p>4.3. Rectification procedures are selected to suit fault and type of finish material</p>

<p>5. Rectify paint faults of clear over-base multi-layer pearl refinishing materials</p>	<p>5.1. <b>Materials</b> to restore paintwork to as new condition are determined from industry, manufacturer and component supplier standards</p> <p>5.2. Damaged paintwork is rectified to blend with existing paintwork <b>quality</b> on vehicle according to industry regulations and guidelines, WHS legislation, and workplace policies and procedures</p> <p>5.3. Paint faults are rectified without causing damage to components or systems</p>
<p>6. Clean up work area and maintain equipment</p>	<p>6.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>6.2. Waste material is removed and disposed of or stored according to statutory and workplace procedure</p> <p>6.3. Spray equipment is cleaned as specified by manufacturer, component supplier and workplace policies and procedures</p> <p>6.4. Work area is cleaned and inspected for serviceable condition according to workplace procedures</p> <p>6.5. Faulty equipment is identified and tagged according to workplace procedures</p> <p>6.6. Operator maintenance is completed according to manufacturer and component supplier specifications and workplace procedures</p> <p>6.7. Tools are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record required paint and measurements
- numeracy skills to calculate paint quantity, mixing ratios and drying times
- planning and organising skills to:
  - plan, use and follow job specifications when mixing and applying clear over-base multi-layer pearl refinishing materials to components
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate clear over-base multi-layer pearl materials and equipment, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as codes of practice or original equipment manufacturer (OEM) repair procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use paint workplace tools and equipment relating to refinishing vehicles and components
- technology skills to:
  - operate vehicle painting and refinishing equipment
  - use technology to collect paint product information

#### Required knowledge

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

- WHS regulations, requirements, equipment and material relating to mixing and applying clear over-base multi-layer pearl material, including personal safety requirements
- environmental protection requirements and substance disposal and storage requirements
- material safety data sheets (MSDS)
- types of and application methods for clear over-base multi-layer pearl refinishing materials
- paint surface fault identification and rectification procedures
- drying methods for clear over-base multi-layer pearl material
- types of spray-guns
- spray-gun operation procedures and spraying techniques
- spray-gun cleaning methods
- planning processes for work required
- workplace quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- prepare clear over-base multi-layer pearl paint
- apply clear over-base multi-layer pearl refinishing
- identify paint faults and determine appropriate rectification procedures
- rectify paint faults
- apply environmental procedures.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- materials relevant to applying clear over-base multi-layer pearl refinishing materials
- equipment, hand and power tools appropriate to applying clear

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- over-base multi-layer pearl refinishing materials
- workplace instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Communications</i></b> may include:	<ul style="list-style-type: none"> <li>• email</li> <li>• verbal instructions</li> <li>• visual instructions</li> <li>• worksite-specific instructions</li> <li>• written instructions</li> <li>• job or task sheets</li> <li>• telephones.</li> </ul>
<b><i>Workplace health and safety requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice and policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• workplace environment policy</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul> </li> </ul>
<b><i>Personal protective equipment:</i></b>	<ul style="list-style-type: none"> <li>• is that prescribed under legislation, regulations, codes of practice, and workplace policies and practices</li> <li>• may include: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• personal protective clothing</li> <li>• full body protection</li> <li>• gloves</li> <li>• respirators</li> <li>• safety shoes</li> <li>• air feed mask.</li> </ul> </li> </ul>
<b><i>Refinishing materials</i></b> may include:	<ul style="list-style-type: none"> <li>• metallic, pearl two-pack base coat</li> <li>• clear two-pack acyclic enamel</li> <li>• hardeners</li> <li>• paint reducers.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• air pressure regulators</li> <li>• air compressors</li> <li>• spray booths</li> <li>• baking ovens</li> <li>• heating and lighting systems</li> <li>• strainers</li> <li>• measuring sticks</li> <li>• ford cups</li> <li>• safety equipment</li> <li>• tinting machines</li> <li>• hand paddles</li> <li>• nylon stocking weave</li> <li>• viscosity measuring equipment</li> <li>• high-volume low-pressure spray-guns</li> <li>• gravity feed spray-guns</li> <li>• suction feed spray-guns</li> <li>• personal protective equipment</li> <li>• polishing and cleaning equipment.</li> </ul>
<b><i>Refinishing methods</i></b> may include:	<ul style="list-style-type: none"> <li>• spray-gun selection</li> <li>• equipment protection methods</li> <li>• various spraying techniques</li> <li>• drying procedures</li> <li>• paint mixing</li> <li>• compound polishing</li> <li>• detailing of surfaces.</li> </ul>
<b><i>Emergency procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• emergency shutdown</li> <li>• extinguishing fires</li> <li>• workplace first aid requirements</li> <li>• workplace evacuation.</li> </ul>
<b><i>Environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• waste management</li> <li>• noise control</li> <li>• dust control</li> <li>• clean-up management.</li> </ul>
<b><i>Statutory and regulatory</i></b>	<ul style="list-style-type: none"> <li>• regulations</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>authority guidelines</i></b> may include:	<ul style="list-style-type: none"> <li>• codes of practice.</li> </ul>
<b><i>Safe operating policies and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• workplace safety policies and procedures</li> <li>• operational risk assessment</li> <li>• toxic substances</li> <li>• electrical safety</li> <li>• machinery movement and operation</li> <li>• manual and mechanical lifting and shifting</li> <li>• working in proximity to others</li> <li>• workplace visitors.</li> </ul>
<b><i>Requirements for environment</i></b> must include:	<ul style="list-style-type: none"> <li>• cleanliness</li> <li>• correct temperature</li> <li>• extraction of fumes.</li> </ul>
<b><i>Recommended methods</i></b> include:	<ul style="list-style-type: none"> <li>• industry regulations and guidelines</li> <li>• WHS legislation</li> <li>• workplace policies and procedures.</li> </ul>
<b><i>Information and documents</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal and written documents</li> <li>• graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins and memos</li> <li>• MSDS</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to colour matching multi-layer clear over-base colours</li> <li>• regulatory and legislative requirements</li> <li>• automotive painting and finishing code of practice</li> <li>• engineer's design specifications</li> <li>• workplace work specifications</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards.</li> </ul>
<b><i>Specifications</i></b> may include:	<ul style="list-style-type: none"> <li>• colour, texture, depth and gloss</li> <li>• contaminant-free</li> <li>• blending into the surrounding surfaces.</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Materials*** may include:

- polishing buffs and pads
- tac-rags
- cleaning solvents
- polishes and glazes
- compounds and cleaning materials
- two-pack urethane acrylic enamels
- clear acrylic lacquers
- paint thinners
- paint reducers
- cleaning materials.

***Quality*** may include:

- industry standards
- workplace standards
- Australian standards
- quality policy
- workplace operation and procedures.

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Paint

**Custom Content Section**

Not applicable.

## AURVTP3025 Mix and apply water-based refinishing materials

### Modification History

Release	Comment
Release 1	Replaces AURV329603FA Apply water based refinishing materials Elements and Performance Criteria updated to reflect mixing of paint products

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to mix and apply water-based refinishing materials to a variety of vehicle bodies and substrates. It involves determining the causes of paint finish faults and rectifying them.</p> <p>The unit involves preparing for work and completing work processes, including clean-up and workplace documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to refinishing technicians in a repair environment who apply water-based materials to a range of vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Workplace instructions and <i>communications</i> are used to determine job requirements, including material type, colour, quality and quantity</p> <p>1.2. <i>Workplace health and safety (WHS) requirements</i>, including <i>personal protective equipment (PPE)</i> needs, are observed throughout the work</p> <p>1.3. <i>Refinishing materials</i> are selected and inspected for quality</p> <p>1.4. Refinishing <i>tools, equipment</i> and PPE are identified and checked for correct operation</p> <p>1.5. <i>Refinishing methods</i> are determined to minimise waste, and maximise energy efficiency while completing the job</p> <p>1.6. Workplace <i>emergency procedures</i> are identified and followed when required</p>
2. Mix water-based paint colours	<p>2.1. Materials are mixed using the appropriate method</p> <p>2.2. Mixing activities are carried out according to <i>environmental requirements</i>; industry, <i>statutory and regulatory authorities' guidelines</i>; WHS legislation; and workplace <i>safe operating policies and procedures</i></p> <p>2.3. Water-based paint colours are mixed without causing damage to components or systems</p>
3. Apply water-based refinishing materials by spray-gun	<p>3.1. <i>Requirements for environment</i> for applying refinishing materials are identified and observed</p> <p>3.2. Refinishing materials are applied using recommended methods and intervals, in line with <i>information</i> from paint supplier and without causing damage to components or systems</p> <p>3.3. Refinishing materials are dried using approved methods and equipment</p> <p>3.4. Paint surface faults are removed using compounds, polishes and glazes</p> <p>3.5. Finish is produced that meets <i>specifications</i></p> <p>3.6. Surface refinishing is completed within approved time frames</p>
4. Identify and rectify paint faults	<p>4.1. Paint faults are identified according to industry and workplace procedures</p> <p>4.2. Paint fault causes are determined according to industry and workplace procedures</p> <p>4.3. Paint surface faults are removed using compounds, polishes and glazes, and rectification procedures that suit fault and type of finish</p>

5. Rectify and touch up paint faults	<p>5.1. <b>Materials</b> to restore paintwork to as new condition are determined from industry and supplier standards</p> <p>5.2. Damaged paintwork is rectified to blend with existing paintwork <b>quality</b> on vehicles</p> <p>5.3. Rectification operations are carried out according to industry regulations and guidelines, WHS legislation and workplace policies and procedures</p> <p>5.4. Paint faults are rectified without causing damage to components or systems</p>
6. Clean up work area and maintain equipment	<p>6.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>6.2. Waste material is removed and disposed of or stored according to statutory and workplace procedures</p> <p>6.3. Spray equipment is cleaned as specified by manufacturer, component supplier and workplace policies and procedures</p> <p>6.4. Work area is cleaned and inspected for serviceable condition according to workplace procedures</p> <p>6.5. Faulty equipment is identified and tagged according to workplace procedures</p> <p>6.6. Operator maintenance is completed according to manufacturer and component supplier specifications and workplace procedures</p> <p>6.7. Tools are maintained according to workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record required paint and paint measurements
- numeracy skills to calculate paint quantity, mixing ratios and drying times
- planning and organising skills to:
  - plan, use and follow job specifications when mixing and applying water-based refinishing materials to components
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate water-based refinishing materials and equipment, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as codes of practice or original equipment manufacturer (OEM) repair procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use paint workplace tools and equipment relating to refinishing vehicles or components
- technology skills to operate vehicle painting and refinishing equipment

#### Required knowledge

- WHS regulations, requirements, equipment and material relating to mixing and applying water-based refinishing materials, including personal safety requirements
- environmental protection requirements and substance disposal and storage requirements
- material safety data sheets (MSDS)
- types of water-based refinishing materials

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- methods and processes for applying water-based material
- paint surface fault identification and rectification procedures
- drying methods for water-based material
- types of spray-guns
- spray-gun operation procedures and spraying techniques
- spray-gun cleaning methods
- planning processes for work required
- workplace quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- prepare water-based paint
- apply water-based refinishing materials
- identify paint faults and determine appropriate rectification procedures
- rectify paint faults
- apply environmental procedures.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- materials relevant to application of water-based refinishing materials
- equipment, hand and power tools appropriate to application of

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- water-based refinishing materials
- specifications and work instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Communications</i></b> may include:	<ul style="list-style-type: none"> <li>• email</li> <li>• telephone</li> <li>• verbal instructions</li> <li>• visual instructions</li> <li>• worksite-specific instructions</li> <li>• written instructions</li> <li>• job and task sheets.</li> </ul>
<b><i>WHS</i></b> requirements:	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice and policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul> </li> </ul>
<b><i>Personal protective equipment:</i></b>	<ul style="list-style-type: none"> <li>• is that prescribed under legislation, regulations, codes of practice, and workplace policies and practices</li> <li>• may include: <ul style="list-style-type: none"> <li>• eye protection</li> <li>• personal protective clothing</li> <li>• gloves</li> <li>• respirators</li> <li>• safety shoes</li> <li>• air feed mask.</li> </ul> </li> </ul>
<b><i>Refinishing materials</i></b> may include:	<ul style="list-style-type: none"> <li>• solid, metallic, pearl base coats</li> <li>• clear two-pack acyclic enamel</li> <li>• hardener</li> <li>• water based reducer.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• air pressure regulators</li> <li>• air compressors</li> <li>• spray booths</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• baking ovens</li> <li>• heating and lighting systems</li> <li>• strainers</li> <li>• measuring sticks</li> <li>• ford cups</li> <li>• safety equipment</li> <li>• tinting machines</li> <li>• hand paddles</li> <li>• nylon stocking weave</li> <li>• viscosity measuring equipment</li> <li>• high-volume low-pressure spray-guns</li> <li>• gravity feed spray-guns</li> <li>• suction feed spray-guns</li> <li>• personal protective equipment</li> <li>• polishing and cleaning equipment.</li> </ul>
<b><i>Refinishing methods</i></b> may include:	<ul style="list-style-type: none"> <li>• spray-gun selection</li> <li>• equipment protection methods</li> <li>• various spraying techniques</li> <li>• drying procedures</li> <li>• paint mixing</li> <li>• compound polishing</li> <li>• detailing of surfaces.</li> </ul>
<b><i>Emergency procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• emergency shutdown</li> <li>• extinguishing fires</li> <li>• workplace first aid requirements</li> <li>• worksite evacuation.</li> </ul>
<b><i>Environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• waste management</li> <li>• noise control</li> <li>• dust control</li> <li>• clean-up management.</li> </ul>
<b><i>Statutory and regulatory authorities' guidelines</i></b> may include:	<ul style="list-style-type: none"> <li>• statutory and regulatory regulations</li> <li>• codes of practice.</li> </ul>
<b><i>Safe operating policies and</i></b>	<ul style="list-style-type: none"> <li>• workplace safety policies and procedures</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>procedures</i></b> may include:	<ul style="list-style-type: none"> <li>operational risk assessment</li> <li>toxic substances</li> <li>electrical safety</li> <li>machinery movement and operation</li> <li>manual and mechanical lifting and shifting</li> <li>working in proximity to others</li> <li>workplace visitors.</li> </ul>
<b><i>Requirements for environment</i></b> may include:	<ul style="list-style-type: none"> <li>requirements for temperature</li> <li>extraction of fumes</li> <li>cleanliness.</li> </ul>
<b><i>Information</i></b> may include:	<ul style="list-style-type: none"> <li>verbal and written information</li> <li>graphical instructions</li> <li>signage</li> <li>work schedules, plans and specifications</li> <li>work bulletins and memos</li> <li>MSDS</li> <li>diagrams and sketches</li> <li>safe work procedures relating to colour matching multi-layer clear over-base colours</li> <li>regulatory and legislative requirements</li> <li>automotive painting and finishing code of practice</li> <li>engineer's design specifications</li> <li>workplace work specifications</li> <li>instructions issued by authorised workplace or external persons</li> <li>Australian standards.</li> </ul>
<b><i>Specifications</i></b> may include:	<ul style="list-style-type: none"> <li>colour, texture, depth and gloss</li> <li>contaminant-free</li> <li>blending into the surrounding surfaces.</li> </ul>
<b><i>Materials</i></b> may include:	<ul style="list-style-type: none"> <li>polishing buffs and pads</li> <li>tac-rags</li> <li>cleaning solvents</li> <li>polishes and glazes</li> <li>compounds and cleaning materials</li> <li>two-pack urethane acrylic enamels</li> <li>clear acrylic lacquers</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• paint thinners</li><li>• paint reducers</li><li>• cleaning materials.</li></ul>
<b><i>Quality</i></b> may include:	<ul style="list-style-type: none"><li>• industry standards</li><li>• workplace standards</li><li>• Australian standards</li><li>• quality policy</li><li>• workplace operations and procedures.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Paint

**Custom Content Section**

Not applicable.

## AURVTS2006 Carry out fabrication of components

### Modification History

Release	Comment
Release 1	Replaces AURV224508A Carry out fabrication of components Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to measure, mark out and carry out fabrication of basic components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, selection of material, fabrication of components to specifications, and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit covers only fabrication of basic or straightforward components.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets, quality and quantity of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</p>
2. Perform basic fabrication	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Suitable materials are selected and components/equipment fabricated to specific requirements.</p> <p>2.3. Procedures for set-up are followed in accordance with plan, customer requirements and specifications.</p> <p>2.4. Tooling, equipment and material are located on worksite and confirmed for commencement of production in accordance with enterprise established procedures.</p> <p>2.5. Work plan is followed to commence fabrication.</p>
3. Monitor fabrication process and outputs	<p>3.1. Key characteristics are monitored to ensure conformity to specifications during fabrication process.</p> <p>3.2. Fabrication is checked for conformity to specification.</p> <p>3.3. Product is tagged and stored and safely for future use.</p> <p>3.4. Fabrication operations are carried out according to industry regulations/guideline, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and Maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for fabricating a component
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of line and material
- use workplace technology related to fabrication of components, including use of specialist tooling, measuring equipment, use of communication devices and reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- equipment maintenance procedures
- vehicle/material safety requirements
- manufacturer/component supplier/company policies
- types of fabrication materials and their application
- fabrication procedures/marking out and cutting procedures
- methods of fastening/gluing/bonding
- planning of fabrication, processes and techniques
- workplace guidelines regarding acceptable tolerance levels
- procedures for reporting faults and material defects
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to circumstances
- completing preparatory activity in a systematic manner
- selecting material used in the work process
- identifying, setting up, operating and maintaining equipment to complete a range of component fabrication tasks
- conducting operator maintenance on welding, bending, lifting and measuring equipment.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to fabrication of components
  - equipment, hand and power tooling appropriate to fabrication of components
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce integration of key competencies.</li> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Fabrication methods**

Fabrication methods are to include:

- welding, heating, soldering, measuring, mechanical fastening, cutting, shaping, bending, bonding, gluing, marking and assembling

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	<p>may include:</p> <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities</li> </ul>

<b>RANGE STATEMENT</b>	
	administering applicable Acts, regulations and codes of practice
<b>Tooling and equipment</b>	<p>Tooling and equipment are to include:</p> <ul style="list-style-type: none"> <li>hand tooling, power tooling, welding equipment, cutting equipment, measuring equipment, marking out equipment, lifting and bending equipment</li> </ul>
<b>Materials</b>	Materials may include sheet metal, bonding material, steel, paints, plastics and cleaning materials.
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>safe work procedures related to fabrication of basic components</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> <li>instructions issued by authorised enterprise or external persons</li> <li>Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Fabrication
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## AURVTS3001 Carry out wood working operations for fabrication

### Modification History

Release	Comment
Release 1	<p>Replaces AURV324708ACarry out wood working operations for fabrication</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to fabricate components, plugs or moulds using wood material/templates.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, fabrication and checking of wood products and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, quality and quantity of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Fabricate wood components and parts	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Materials are selected and prepared for fabrication.</p> <p>2.3. Fabrication procedures are carried out following enterprise policies and procedures within established enterprise guidelines.</p> <p>2.4. Fabrication in wood material is achieved without causing damage to equipment or machinery.</p> <p>2.5. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.6. Fabricated items are checked to specification and workplace records are completed to worksite requirements.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedure.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace procedures.</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to fabrication of wood materials, including the use of specialist tooling, measuring equipment and communication devices and the reporting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- fabrication procedures
- measuring procedures
- adhesives and their application
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing the fabrication of components and plugs or moulds without damage to components, tooling, equipment and persons.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to fabrication of wood materials
- equipment, hand and power tooling appropriate to fabrication of wood materials
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include manual, machine operation, measuring, interpreting of drawings, fabrication procedures, gluing, screwing and nailing.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and

<b>RANGE STATEMENT</b>	
	substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, special equipment, including wood working tooling and equipment, jigs, measuring equipment and templates.
<b>Materials</b>	Materials may include raw materials, adhesives, spare parts, fasteners and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or

RANGE STATEMENT	
	instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to fabrication of wood materials</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Fabrication
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## AURVTS3002 Repair plugs, moulds, frames and flooring using wood materials

### Modification History

Release	Comment
Release 1	<p>Replaces AURV324766A Repair plugs, moulds, frames and flooring using wood materials</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to repair plugs, moulds, frames and flooring on vehicle bodies using wood materials.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, repair and checking of components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, quality and quantity of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out repair procedures	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Method of repair is identified.</p> <p>2.3. Area for repair is prepared and materials selected.</p> <p>2.4. Repair procedures are carried out within industry guidelines.</p> <p>2.5. Repair procedures are completed without causing damage to equipment or machinery.</p> <p>2.6. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.7. Repaired items are checked to specification and workplace/equipment records are completed to worksite requirements.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedure.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to wood material repairs, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- cleaning agents
- types of materials and their application, including adhesives
- measuring procedures
- repair procedures
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• completing repair procedures following enterprise guidelines</li> <li>• repairing plugs, moulds, frames and flooring using wood materials without damage to components, tooling, equipment and persons</li> <li>• completing workplace records.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to wood material repairs</li> <li>• equipment, hand and power tooling appropriate to wood material repairs</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of</li> </ul>

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include manual, machine operating, measuring, interpreting of drawings, repair procedures, gluing, screwing and nailing.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace

<b>RANGE STATEMENT</b>	
	environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, special equipment, including wood working tooling and equipment, jigs, measuring equipment, fastening equipment, scalers, brushes and spraying equipment.
<b>Materials</b>	Materials may include paints, adhesives, fasteners and cleaning materials.

RANGE STATEMENT	
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to wooden material repairs</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Fabrication
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## AURVTS3003 Fabricate composite material components

### Modification History

Release	Comment
Release 1	<p>Replaces AURV324823A Fabricate composite material components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to fabricate components for use in vehicle bodies using composite materials, such as fibreglass, carbon fibre and Kevlar.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, fabrication and checking of components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including job sheets, quality and quantity of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Fabricate item/ component to determined requirements	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Tooling and materials are prepared for use.</p> <p>2.3. Fabrication procedures are carried out following enterprise procedures.</p> <p>2.4. Item/component is fabricated without causing damage to equipment or machinery.</p> <p>2.5. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p> <p>2.6. Fabricated component is checked to specification and workplace records are completed to worksite requirements.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedures.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace procedures.</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to fabrication of composite material components, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental requirements
- types of composite materials
- fabrication processes
- technical information
- measuring procedures
- manufacturer/component supplier/enterprise policies
- manual handling techniques

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing a range of component fabrication to enterprise requirements
- completing component fabrication without damage to tooling, equipment and persons
- completing workplace records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials to fabrication of composite material components
- equipment, hand and power tooling appropriate to fabrication of composite material components
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Composite materials</b>	Composite materials may include fibreglass, carbon fibre and Kevlar.
<b>Methods</b>	Methods are to include both hand and machine operations, mixing, measuring and jig work, and mould usage.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This

<b>RANGE STATEMENT</b>	
	may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors .
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for composite material work, moulds, jigs and measuring equipment.
<b>Materials</b>	Materials may include composite materials, mixers, fibreglass, carbon fibre, Kevlar and

<b>RANGE STATEMENT</b>	
	cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to fabrication of composite material components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Fabrication
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## AURVTS3004 Repair fibreglass and composite material components

### Modification History

Release	Comment
Release 1	<p>Replaces AURV324866A Repair fibreglass and composite material components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to repair components on vehicle bodies using composite materials.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, repair and checking of components and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine the job requirements, including job sheets, quality and quantity of materials. 1.2. Job specifications are read and interpreted. 1.3. WHS requirements, including personal protection needs, are observed throughout the work. 1.4. Materials are selected and inspected for quality. 1.5. Hand, power tooling and safety equipment are identified and checked for safe use. 1.6. Procedures are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Carry out repair procedures	2.1. Information is accessed and interpreted from manufacturer/component supplier specifications. 2.2. Items to be repaired are identified. 2.3. Methods of repair are identified. 2.4. Equipment, tooling and materials are prepared for use. 2.5. Repair procedures are carried out following enterprise procedures. 2.6. Repair procedures are completed without causing damage to equipment or machinery. 2.7. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies. 2.8. Repairs are checked to specification and workplace/equipment records are completed to worksite requirements.
3. Clean up work area and maintain equipment	3.1. Material that can be reused is collected and stored. 3.2. Waste and scrap is removed following workplace procedure. 3.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures. 3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures. 3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications

ELEMENT	PERFORMANCE CRITERIA
	and worksite procedures. 3.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair of composite material components, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental requirements
- measuring procedures
- technical information
- types of composite materials (including fibreglass) and their application
- repair procedures
- manufacturer/component supplier/company policies
- manual handling techniques

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• work organisation and planning processes</li><li>• enterprise quality processes</li></ul>

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing repair procedures to a range of components to enterprise and manufacturer/component supplier requirements
- completing repair procedures without damage to tooling, equipment and persons
- completing repair procedures within enterprise timeframes
- completing workplace/equipment records.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair of composite material components
- equipment, hand and power tooling appropriate to repair of composite material components
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Composite materials**

Composite materials may include fibreglass, carbon fibre and Kevlar.

**Methods**

Methods are to include both hand and machine operations, mixing and application.

<b>RANGE STATEMENT</b>	
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, specialist tooling for composite material work, mixers, moulds, jigs and

RANGE STATEMENT	
	measuring equipment.
<b>Materials</b>	Materials may include fibreglass, carbon fibre, Kevlar and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to repair of composite material components</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Fabrication
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## AURVTS3005 Fabricate vehicle body panels and components

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to measure, develop patterns and templates, and carry out panel fabrication activities to produce body panels and components.</p> <p>It includes the identification of panel shapes, preparation for work, selection of material, use of production techniques, and use of specialist tools when fabricating vehicle body panels or components to specification.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to the vehicle restoration industry and the fabrication of panels or panel sections that may be needed during a restoration process.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements</p> <p>1.2. Legal, <i>workplace health and safety (WHS) and environmental requirements</i>, policies and procedures, and manufacturer and component specifications are identified and complied with</p> <p>1.3. Personal protective equipment, <i>tools and equipment</i>, and <i>materials</i> are selected and checked for correct operation</p>
2. Produce patterns and templates	<p>2.1. Paper patterns are produced from sample panel or simulated frame, indicating panel size, panel shapes and all folds and edges</p> <p>2.2. Templates are produced from sample panel or simulated frame</p> <p>2.3. Difference between convex and concave shapes is correctly identified</p>
3. Cut material	<p>3.1. Panel steel or aluminium sections are selected and checked for quality</p> <p>3.2. Patterns and templates are transferred to steel or aluminium sheet surface</p> <p>3.3. Selected hand tools are used to cut steel or aluminium to pattern and panel specification</p> <p>3.4. Panels are filed to remove sharp edges</p>
4. Shape panels	<p>4.1. Panel shaping equipment and hand tools are selected, including 'English' wheeling machine</p> <p>4.2. Required shapes are identified and fabricated to pattern specification, following WHS and workplace environmental practices</p> <p>4.3. Shaped panel sections are checked against pattern and template specifications for <i>quality</i> finish and conformity</p>
5. Evaluate and check fabricated panel	<p>5.1. Fabricated panel sections are inspected for quality finish and fits to sample panel or frame</p> <p>5.2. Panels are fitted to vehicle or frame without distortion</p>
6. Clean up work area and maintain equipment	<p>6.1. Material that can be reused is collected and stored according to workplace sustainability practices</p> <p>6.2. Waste materials are removed following workplace procedures</p>

	<p>6.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>6.4. Faulty tools and equipment are identified and tagged according to workplace procedures</p> <p>6.5. Tools and equipment are cleaned and maintained according to workplace procedures</p>
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal instructions
  - follow job sheets and work orders
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record measurements
- numeracy skills to measure and calculate material, size, shape and specifications
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to refer problems outside area of responsibility to appropriate person and suggest possible causes
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to fabricating panels, including the use of specialist tools and equipment
- technology skills to operate 'English' wheeling machine and specialist panel fabrication tools

#### Required knowledge

- WHS regulations and requirements relating to fabrication process
- personal safety requirements relating to fabricating vehicle body panels and components
- equipment maintenance procedures
- procedures for the correct use of panel fabrication specialist equipment
- industry standards, customer requirements and workplace quality procedures relating to the fabrication of panel sections

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- techniques for producing paper patterns and templates
- marking and cutting out procedures
- wheeling and shaping techniques
- features of convex and concave shapes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- apply vehicle protection methods
- select the equipment most appropriate to the circumstances
- complete panel fabrication to match sample panel or simulated frame.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- materials relevant to panel fabrication processes
- equipment, hand and power tools appropriate to panel fabrication processes
- panel specifications and work instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• correct use of tools and equipment</li> <li>• workplace first aid equipment</li> <li>• safe handling of material</li> <li>• hazardous materials and substances</li> <li>• personal safety</li> <li>• PPE</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety.</li> </ul>
<b><i>Environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• waste management</li> <li>• noise control</li> <li>• dust control</li> <li>• clean-up management.</li> </ul>
<b><i>Tools and equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• hand and power tools</li> <li>• panel shaping hammers</li> <li>• sand bags</li> <li>• body sweeps</li> <li>• timber blocks</li> <li>• clamps.</li> </ul>
<b><i>Materials</i></b> may include:	<ul style="list-style-type: none"> <li>• mild steel sheeting</li> <li>• aluminium sheeting</li> <li>• paper for pattern</li> <li>• cardboard for templates</li> <li>• cleaning materials.</li> </ul>
<b><i>Quality</i></b> may include:	<ul style="list-style-type: none"> <li>• industry standard</li> <li>• workplace finish quality standard</li> <li>• original vehicle manufacturer finish and surface standard.</li> </ul>

**Unit Sector(s)**

<b>Competency field</b>	Vehicle body
<b>Unit sector</b>	Technical – Fabrication

**Custom Content Section**

Not applicable.

## AURVTT2001 Carry out sewing repairs and alterations

### Modification History

Release	Comment
Release 1	Replaces AURV230608A Carry out sewing repairs and alterations Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to carry out sewing operations and machine maintenance.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, carrying out hand and machine sewing procedures, maintenance of sewing machine, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in methods of trim repairs and alterations.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including quality and quantities of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials for repairs and alterations are selected and inspected for quality.</p> <p>1.5. Hand and power tooling are inspected for safe use.</p> <p>1.6. Products are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out hand and machine sewing procedures	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Sewing procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Sewing procedures are completed within established industry/enterprise guidelines.</p> <p>2.4. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Carry out sewing machine maintenance procedures	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Cleaning and lubricating procedures are carried out to manufacturer/component supplier/enterprise guidelines.</p> <p>3.3. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedures.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications</p>

ELEMENT	PERFORMANCE CRITERIA
	and worksite procedures. 4.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to sewing repairs and alterations, work orders, plans and safety procedures for fabricating a component or piece of equipment
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to carrying out sewing repairs and alterations, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- technical information
- equipment operation and safety requirements
- manufacturer/component supplier/company policies
- material matching procedures
- machine sewing procedures
- sewing methods appropriate to various material types
- planning processes and techniques for sewing repairs and alterations
- workplace guidelines regarding tolerance levels to manufacture/component supplier/enterprise/customer requirements
- procedures for reporting faults and material defects
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, setting up, operating and maintaining sewing equipment and procedures to complete a range of sewing repairs and alterations
- maintaining sewing machine equipment.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to carrying out sewing repairs and alterations
  - equipment, hand and power tooling appropriate to carrying out sewing repairs and alterations
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"> <li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Sewing repairs and alterations**

Sewing repairs and alterations are to include:

- small repairs and alterations to vehicle trim

**Sewing methods**

Sewing methods are to include:

- both hand and machine sewing
- component removal and replacement
- repair of trims trim alterations

<b>RANGE STATEMENT</b>	
<b>Sewing machine maintenance procedures</b>	Sewing machine maintenance procedures are to be included
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand and power tooling</li> <li>• sewing machines</li> <li>• specialist tooling for dismantling/assembly</li> <li>• scissors, needles and knives</li> <li>• straight edge</li> <li>• tape</li> <li>• square</li> <li>• marking chalk</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>• trim cloth</li> <li>• sewing material</li> <li>• cleaning materials</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to carrying out sewing repairs and alterations</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT2002 Carry out trim repairs and alterations

### Modification History

Release	Comment
Release 1	Replaces AURV230708A Carry out trim repairs and alterations Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to measure, cut, fabricate, and attach material covers to vehicle components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirements, preparation for work, matching, measuring, cutting, fabricating and attaching material to vehicle components, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in selecting, altering, fabricating and applying trim material.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including quality, material, equipment and quantities.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials for repairs and alterations are selected and inspected for quality.</p> <p>1.5. Hand and power tooling are identified and checked for safe use.</p> <p>1.6. Products are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Match material	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Matching procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Matching procedures are completed within established industry/enterprise guidelines.</p> <p>2.4. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures policies.</p>
3. Measure and cut material	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Measuring and cutting procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>3.3. Measuring and cutting procedures are completed within established industry/enterprise guidelines.</p> <p>3.4. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Fabricate trim/covers to suit vehicle components	<p>4.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>4.2. Trim/cover fabrication procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>4.3. Fabrication procedures are completed within</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>established industry/enterprise guidelines.</p> <p>4.4.Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
5. Attach material cover to vehicle/component	<p>5.1.Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>5.2.Attaching procedures are completed in accordance with manufacturer/component supplier specifications and within established industry/enterprise guidelines.</p> <p>5.3.Material is attached without causing damage to component or system.</p> <p>5.4.Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
6. Clean up work area and maintain equipment	<p>6.1.Material that can be reused is collected and stored.</p> <p>6.2.Waste and scrap is removed following workplace procedures.</p> <p>6.3.Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>6.4.Unserviceable equipment is tagged and faults identified in accordance with workplace.</p> <p>6.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>6.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to trimming, fabrication adhesives, material and work orders, plans and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to carrying out trim repairs and alterations, including the use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- technical and legal requirements
- manufacturer/component supplier/company policies
- removal and replacement methods
- measuring/testing and adjustment procedures
- types and use of various materials
- trim fabrication, matching, measuring and cutting procedures
- planning trim repairs, fabrication processes and techniques
- workplace guidelines regarding acceptable tolerance levels
- procedures for reporting faults and material defects
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, setting up, operating and maintaining trim repairs equipment and procedures to complete a range of:
  - trim repairs
  - sewing operations
  - fabrication techniques
  - completing workplace records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to carrying out trim repairs and alterations
  - equipment, hand and power tooling appropriate to carrying out trim repairs and alterations
  - activities covering mandatory task requirements
  - specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project-related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Trim repairs and alterations</b>	<p>Trim repairs and alterations are to include:</p> <ul style="list-style-type: none"> <li>• small repairs and alterations to vehicle trim</li> </ul>
<b>Repair and alteration methods</b>	<p>Repair and alteration methods are to include:</p> <ul style="list-style-type: none"> <li>• removing, repairing, fabricating, and altering vehicle trim components</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of</li> </ul>

<b>RANGE STATEMENT</b>	
	equipment <ul style="list-style-type: none"> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>• hand and power tooling</li> <li>• specialist tooling for dismantling/assembly</li> <li>• staple gun, hammers, wad punches and heat gun</li> <li>• foam cutter, scissors and knives</li> <li>• revolving hole punch</li> <li>• ruler and tape</li> <li>• hand clamps</li> <li>• adhesive gun</li> <li>• pop rivet kit</li> <li>• punch and die set</li> <li>• hog ring pliers</li> <li>• door handle remover</li> <li>• hacksaw</li> <li>• sander</li> <li>• staple and tack remover</li> <li>• scrapers and putty knives</li> <li>• stuffing irons</li> <li>• vacuum formers</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"><li>• trim</li><li>• adhesives</li><li>• fabrication material and components</li><li>• cleaning materials</li></ul>
<b>Communications</b>	Communications are to include, but are not limited to: <ul style="list-style-type: none"><li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li></ul>
<b>Information/documents</b>	Sources of information/documents may include: <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li><li>• safe work procedures related to carrying out trim repairs and alterations</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT2003 Remove and replace vehicle interior trim components

### Modification History

Release	Comment
Release 1	<p>Replaces AURV230864A Remove and replace vehicle interior trim components</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to remove and replace vehicle interior trim components to facilitate trim repairs/replacement.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, removal and replacement of interior trim components, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for the work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove interior trim components	<p>2.1. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Replace interior trim components	<p>3.1. Replacement activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for removing and replacing trim components
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to removing and replacing vehicle interior trim components, including the use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- vehicle safety requirements
- use of tooling and equipment
- manual handling techniques
- removal and replacement/refitting procedures for trim components, including electrical disconnection and reconnection methods and procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- removing and replacing a range of trim components
- completing workplace records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to removing and replacing vehicle interior trim components
  - equipment, hand and power tooling appropriate to removing and replacing vehicle interior trim components
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include:

- visual, mechanical and physical examinations
- removal and replacement/refitting of trim components
- electrical disconnection and reconnection

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of</li> </ul>

<b>RANGE STATEMENT</b>	
	practice
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• lifting equipment</li> <li>• special equipment/tooling for removal and replacement</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to removing and replacing vehicle interior trim components</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT2004 Trim vehicle components

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231208A Carry out trimming of vehicle components</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to measure, cut, fabricate and attach material covers to vehicle components.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, matching, measuring, cutting, fabricating and attaching of material covers to vehicle components, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, process and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal safety needs, are observed throughout the work.</p> <p>1.4. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.5. Procedures are determined to minimise task time.</p>
2. Match material	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Matching procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Matching procedures are completed within established industry enterprise guidelines.</p> <p>2.4. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Measure and cut material	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Measuring and cutting procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>3.3. Measuring and cutting procedures are completed within established industry enterprise guidelines.</p> <p>3.4. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Fabricate trim/covers to suit vehicle/ components	<p>4.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>4.2. Trim/cover fabrication procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>4.3. Fabrication procedures are completed within established industry enterprise guidelines.</p> <p>4.4. Activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>

ELEMENT	PERFORMANCE CRITERIA
5. Attach material cover to vehicle/component	<p>5.1.Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>5.2.Attaching procedures are carried out in accordance with manufacturer/component supplier specifications.</p> <p>5.3.Attaching procedures are completed within established industry/enterprise guidelines.</p> <p>5.4.Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
6. Clean up work area and maintain equipment	<p>6.1.Material that can be reused is collected and stored.</p> <p>6.2.Waste and scrap is removed following workplace procedure.</p> <p>6.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>6.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>6.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>6.6.Tooling and equipment is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for trimming of vehicle components
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information regarding trimming requirements
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete tests and measurements to determine trimming requirements
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform trimming activities
- problem-solving skills for a range of differing procedural issues
- use workplace technology related to carrying out trimming of vehicle components, including the use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- removal and replacement methods
- measuring/testing and adjustment procedures
- technical and legal requirements

**REQUIRED SKILLS AND KNOWLEDGE**

- manufacturer/component supplier/company policies
- types and uses of various materials
- trim fabrication, matching, measuring and cutting procedures
- use of tooling and equipment
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- fabricating covers/trims
- repairing material covers/trims
- replacing material covers/trims
- adjusting material covers/trims
- completing workplace records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - material relevant to carrying out trimming of vehicle components
  - equipment, hand and power tooling appropriate to carrying out trimming of vehicle components
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance together with application of underpinning knowledge.</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Trimming methods

Trimming methods are to include:

- sewing, gluing, riveting, cutting, forming and stapling

#### Vehicles

Vehicles may include:

- marine craft aircraft
- light and heavy vehicles and equipment

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.

#### Emergency procedures

Emergency procedures related to this unit are to include, but are not limited to:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• power/air tooling</li> <li>• specialist tooling for dismantling/assembly</li> <li>• staple gun</li> <li>• hammers</li> <li>• wad punches</li> <li>• heat gun</li> <li>• foam cutter</li> <li>• scissors and knives</li> <li>• revolving hole punch</li> <li>• ruler and tape</li> <li>• hand clamps</li> <li>• adhesive gun</li> <li>• pop rivet kit</li> <li>• punch and die set</li> <li>• hog ring pliers</li> <li>• door handle remover</li> <li>• hacksaw</li> <li>• sander</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• staple and tack remover</li> <li>• scrapers and putty knives</li> <li>• stuffing irons</li> <li>• vacuum formers</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• fabrics and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• Safe work procedures related to carrying out trimming of vehicle components</li> <li>• Regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• Organisation work specifications and requirements</li> <li>• Instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT2005 Select and apply trim and fabric materials

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231268A Select and apply trim/fabric materials and determine attachment methods</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to select trim/fabric materials and determine methods of attaching trim/fabric materials.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, selection of trim/fabric material for specific applications, selection of the methods of attachment of material to vehicle components, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, process and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal safety needs, are observed throughout the work.</p> <p>1.4. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.5. Procedures are determined to minimise task time.</p>
2. Select trim/fabric materials	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. Material applications and usages are compared with the job requirements.</p> <p>2.3. The material selected is that which best meets the user requirement.</p> <p>2.4. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Determine attachment methods	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Attachment options are identified and analysed.</p> <p>3.3. Attachment option is selected.</p> <p>3.4. Selected option is documented.</p>
4. Clean up work area and maintain equipment	<p>4.1. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.2. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.3. Equipment is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for selection and application of trim/fabric materials
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information relating to selection and application of trim/fabric materials
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete tests and measurements to determine selection and application of trim/fabric materials
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to selection and application of trim/fabric materials, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- manufacturer/component supplier/company specifications
- trim/fabric material types and their application
- selection procedures to determine trim/fabric material requirements
- methods of attachment of trim/fabric materials
- work organisation and planning processes

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
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- |  |
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| <ul style="list-style-type: none"><li>• enterprise quality processes</li></ul> |
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## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- completing preparatory activity in a systematic manner
- selecting trim/fabric materials for a range of specified jobs
- determine attachment methods to be used for a range of specified jobs.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to selection and determination of attachment methods of trim/fabric materials
  - equipment, hand and power tooling appropriate to selection and determination of attachment methods of trim/fabric materials
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods to be considered are to include:

- clamping, crimping, gluing and sewing

#### Trim/fabric materials

Trim/fabric materials may be attached to:

- passenger/commercial vehicles
- plant and agricultural equipment
- recreational equipment
- mining equipment
- marine craft and aircraft

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

<b>RANGE STATEMENT</b>	
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• computers</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• fabric and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and may include worksite specific instructions, written instructions, plans or instructions related to job/task</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, catalogues, colour charts, vehicle details, material safety data sheets (MSDS), diagrams or sketches</li> <li>• regulatory/legislative requirements pertaining to trim/fabric materials</li> <li>• organisation work specifications and requirements</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT2006 Select and apply trim and fabric adhesives

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231368A Select and apply trim/fabric adhesives</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to select, prepare and apply trim/fabric adhesives.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions.</p> <p>Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, selection, preparation and application of trim adhesives, and completion of work finalisation processes, including clean-up and documentation.</p> <p>This unit may be applied in relation to heavy vehicles, plant and agricultural equipment, recreational craft, mining equipment, marine craft and aircraft.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, process and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal safety needs, are observed throughout the work.</p> <p>1.4. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.5. Procedures are determined to minimise task time.</p>
2. Select adhesive	<p>2.1. Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2. Adhesives are selected according to material type and adhesive produce/manufacturer/component supplier recommendations.</p> <p>2.3. Activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Prepare surfaces and apply adhesive	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. Adhesive surface preparation and application procedures are carried out in accordance with adhesive product/ manufacturer/component supplier specifications.</p> <p>3.3. Work is completed without causing damage to component or system.</p> <p>3.4. Activities are carried out according to industry regulations/ guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	4.6.Tooling and equipment is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for selection, preparation and application of adhesives
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information for selection, preparation and application of adhesives
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete tests and measurements to determine selection, preparation and application of adhesives
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform the preparation and application of adhesives
- problem-solving skills for a range of differing procedural issues
- use workplace technology related to selection and application of trim/fabric adhesives, including the use of specialist tooling and equipment, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS cleaning materials, equipment, material and personal safety requirements
- technical information
- product safety requirements
- manufacturer/component supplier/company policies

**REQUIRED SKILLS AND KNOWLEDGE**

- adhesive types and their application
- adhesive selection, preparation and application procedures
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- selecting and applying a range of trim/fabric adhesives
- completing workplace records.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to selection and application of trim/fabric adhesives
  - equipment, hand and power tooling appropriate to selection and application of trim/fabric adhesives
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Adhesive surface components

Adhesive surface components may include:

- glass components
- mouldings/trim
- mirrors
- weather shields
- body components and panels
- foam, fibreglass and trim fabrics

#### WHS

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous material and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to

<b>RANGE STATEMENT</b>	
	<p>include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• power/air tooling</li> <li>• cleaning equipment</li> <li>• sealing equipment</li> <li>• cutting equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• adhesives, solvents, resins and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li><li>• safe work procedures related to selection and application of trim/fabric adhesives</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT2007 Clean and finish plastic trim and fittings

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231809AA Clean and finish plastic trim and fittings</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to clean and finish vehicle internal and external plastic trim and fittings.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, selection and use of cleaning and finishing material, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine work requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Clean vehicle internal and external plastic trim and fittings	<p>2.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>2.2. Cleaning agents are selected and used according to plastic trim and fitting types, workplace methods and product manufacturer/component supplier recommendations.</p> <p>2.3. Plastic trim and fittings are cleaned according to workplace/customer and product manufacturer/component supplier prescribed methods and procedures.</p> <p>2.4. Cleaning is completed without causing damage to component or system.</p> <p>2.5. Vehicle plastic trim and fittings are cleaned according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>2.6. Cleaning agents are stored according to manufacturer/component supplier recommendations and regulatory requirements.</p>
3. Finish vehicle internal and external plastic trim and fittings	<p>3.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>3.2. Finishing agents are selected and used according to plastic trim and fitting types, workplace methods and product manufacturer/component supplier recommendations.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3. Plastic trim and fittings are finished according to workplace/customer and product manufacturer/component supplier prescribed methods and procedures.</p> <p>3.4. Finishing is completed without causing damage to component or system.</p> <p>3.5. Vehicle plastic trim and fittings are finished according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/ policies.</p> <p>3.6. Finishing agents are stored according to manufacturer/ component supplier recommendations and regulatory requirement.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste material is removed following workplace and environmental procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for cleaning and finishing vehicle internal and external plastic trim and fittings
- identify safety precautions and recommended applications and procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- read and interpret product labels/directions
- listen to and follow verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work, including the measuring and mixing cleaning and finishing material/fluids
- use workplace technology related to the cleaning and finishing of plastic trim fittings, including the use of measuring equipment and communication devices and the reporting/ documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- environmental requirements for storage, handling and disposal of substances
- material safety data sheets
- types of vehicle body plastics, trim and fittings
- cleaning agents and their recommended applications
- finishing agents and their recommended applications
- cleaning and finishing procedures for internal and external vehicle body plastic trim and fittings

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:
- observing safety procedures and requirements
  - communicating effectively with others involved in or affected by the work
  - selecting methods and techniques appropriate to the circumstances
  - completing preparatory activity in a systematic manner
  - selecting and using material and equipment
  - cleaning and finishing of a range of internal and external vehicle body plastic trim and fittings.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian Standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the cleaning and finishing of plastic trim fittings
  - equipment, hand and power tooling appropriate to the cleaning and finishing of plastic trim fittings
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include:

- manual or machine assisted cleaning and finishing

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Materials</b>	Materials may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• cloths</li> <li>• brushes</li> <li>• finishing agents</li> <li>• cleaning agents</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the cleaning and finishing of plastic trim fittings</li> <li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Trimming and Upholstery
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## AURVTT2008 Clean and finish vehicle interior trim and seats

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231809BA Clean and finish vehicle interior trim and seats</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to clean and finish vehicle interior trim, seats and floor coverings, including boot/baggage/storage compartments.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirements, preparation for work, cleaning and finishing of vehicle interior trim, seats and floor coverings, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine work requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Clean vehicle interior trim and seats	<p>2.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>2.2. Cleaning agents are selected according to trim and seat fabric type, workplace methods and product/fabric manufacturer/component supplier recommendations.</p> <p>2.3. Cleaning agents are used and stored according to manufacturer/component supplier recommendations and regulatory requirements.</p> <p>2.4. Interior trim and seats are cleaned according to workplace/ customer and product/fabric manufacturer/component supplier prescribed methods and procedures.</p> <p>2.5. Cleaning is completed without causing damage to component or system.</p> <p>2.6. Interior trim and seats are cleaned according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Finish vehicle interior trim and seats	<p>3.1. Tooling and equipment are selected and used according to workplace methods and customer requirements.</p> <p>3.2. Finishing agents are selected according to trim and seat fabric type, workplace methods and product/fabric manufacturer/component supplier recommendations.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>3.3.Finishing agents are used and stored according to manufacturer/component supplier recommendations and regulatory requirement.</p> <p>3.4.Interior trim and seats are finished according to workplace/ customer and product/fabric manufacturer/component supplier prescribed methods and procedures.</p> <p>3.5.Interior trim and seats are finished according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1.Material that can be reused is collected and stored.</p> <p>4.2.Waste material is removed following workplace and environmental procedure.</p> <p>4.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for cleaning and finishing vehicle interior trim and seats
- identifying safety precautions
- identifying recommended applications and procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- reading and interpreting product labels/directions
- listening and following verbal instructions
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work
- measuring and mixing cleaning and finishing material/fluids
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to the cleaning and finishing of vehicle interior trim and seats, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- material safety data sheets
- cleaning agents and their recommended applications
- finishing agents and their recommended applications
- types of trim/components, including seats carpets, mats, dash, arm rests, consoles, door trim
- cleaning and finishing procedures for vehicle interior trim and seats
- enterprise quality procedures
- work organisation and planning processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- selecting and using material and equipment
- cleaning and finishing a range of vehicle interior trim and seats.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the cleaning and finishing of vehicle interior trim and seats
  - equipment, hand and power tooling appropriate to the cleaning and finishing of vehicle interior trim and seats
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Trim and seats</b>	Trim and seats are to include: <ul style="list-style-type: none"> <li>• leather, wood, wool, vinyl, plastic, poly-carbonates and fabric trim and seats</li> <li>• carpet, rubber/composite material floor covers</li> <li>• vehicle interior and boot/luggage/storage compartments</li> </ul>
<b>Methods</b>	Methods are to include: <ul style="list-style-type: none"> <li>• manual or machine assisted cleaning and finishing</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tooling and equipment</li> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid</li> <li>• hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in</li> </ul>

<b>RANGE STATEMENT</b>	
	proximity to others and worksite visitors
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standard</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• cleaning equipment, cloths and brushes</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• cleaning agents, finishing agents and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications,</li> </ul>

**RANGE STATEMENT**

	<p>work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</p> <ul style="list-style-type: none"><li>• safe work procedures related to the cleaning and finishing of vehicle interior trim and seats</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT2009 Remove and replace seats and internal fittings

### Modification History

Release	Comment
Release 1	<p>Replaces AURV231964A Remove and replace seats and internal fittings</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to remove and replace seats and internal fittings to facilitate vehicle detailing/presentation activities.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal and replacement of seats and internal fittings, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal protection needs are observed throughout the work.</p> <p>1.4. Material for removal is selected.</p> <p>1.5. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove seats and fittings	<p>2.1. Protective clothing and equipment appropriate to replacement activities are used.</p> <p>2.2. Seats and fittings are removed using approved methods, tooling and equipment.</p> <p>2.3. Removal activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
3. Replace seats and fittings	<p>3.1. Protective clothing and equipment appropriate to the replacement activities are used.</p> <p>3.2. Seats and fittings are replaced using approved methods, tooling and equipment.</p> <p>3.3. Replacement activities are carried out according to industry regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace and environmental procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	4.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to work orders, plans and safety procedures for removing and replacing seats and internal fittings
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use workplace technology related to removing and replacing seats and internal fittings, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- use of tooling and equipment
- manual handling techniques
- removal and replacement/refitting procedures for seats and internal fittings, including electrical disconnection and reconnection methods and procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- removal and replacement of a range of seats and internal fittings.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to removing and replacing seats and internal fittings
  - equipment, hand and power tooling appropriate to removing and replacing seats and internal fittings
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment may be applied under project-related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Methods**

Methods are to include:

- visual, mechanical and physical examination
- removal and replacement/refitting of components
- electrical disconnection and reconnection

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• workplace environment and safety</li> <li>• handling of material</li> <li>• use of firefighting equipment</li> <li>• enterprise first aid, hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• operational risk assessment and treatments associated with vehicular movement, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• hand tooling, lifting equipment and special equipment/tooling for removal and replacement</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to the removal and replacement of seats and internal fittings</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT3010 Remove and replace vehicle head lining

### Modification History

Release	Comment
Release 1	Replaces AURV330964A Remove and replace vehicle head lining Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to remove and replace vehicle head lining to facilitate trim repairs/replacement.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal and replacement of head lining to specification and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine the job requirements, including method, materials and equipment.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. WHS requirements, including personal protection needs are observed throughout the work.</li><li>1.4. Material for removal is selected.</li><li>1.5. Equipment and tooling are identified and checked for safe and effective operation.</li><li>1.6. Procedures are determined to minimise waste time.</li><li>1.7. Procedures are identified for maximising energy efficiency while completing the job.</li></ul>
2. Remove vehicle head lining	<ul style="list-style-type: none"><li>2.1. Head lining is removed using vehicle manufacturer/ component supplier approved methods, tooling and equipment.</li><li>2.2. Removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li><li>2.3. Removal is completed without causing damage to any component or system.</li></ul>
3. Replace vehicle head lining	<ul style="list-style-type: none"><li>3.1. Head lining is replaced using vehicle manufacturer/ component supplier approved methods, tooling and equipment.</li><li>3.2. Replacement activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</li><li>3.3. Replacement is completed without causing damage to any component or system.</li></ul>
4. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>4.1. Material that can be reused is collected and stored.</li><li>4.2. Waste and scrap is removed following workplace and environmental procedure.</li><li>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</li><li>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</li><li>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</li></ul>

ELEMENT	PERFORMANCE CRITERIA
	4.6.Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for removing and replacing vehicle head lining
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to calculate time, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to removal and replacement of vehicle head lining, including the use of specialist tooling, measuring equipment and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types of head linings, materials and handling precautions
- removal and replacement/refitting procedures, including electrical disconnection and reconnection methods and procedures
- use of tooling and equipment
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- removing and replacing a range of vehicle head lining to specification.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to removal and replacement of vehicle head lining
- equipment, hand and power tooling appropriate to removal and replacement of vehicle head lining
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Removal and replacement methods**

Removal and replacement methods are to include:

- visual, mechanical and physical examinations
- removal and replacement/refitting of vehicle head lining
- electrical disconnection and reconnection.

**WHS**

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid,

<b>RANGE STATEMENT</b>	
	hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling and special equipment/tooling for removal and replacement/ refitting.
<b>Materials</b>	Materials may include vinyl, fabric, foam, adhesives and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or

RANGE STATEMENT	
	instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to removal and replacement of vehicle head lining</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT3011 Repair seat frames

### Modification History

Release	Comment
Release 1	Replaces AURV331066A Repair seat frames Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to repair damaged vehicle seat frames.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, removal of seat, seat trim and padding and repair of seat frame, refitting and adjusting of seat trim and padding, reinstallation of seat, and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, process and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal safety needs, are observed throughout the work.</p> <p>1.4. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.5. Procedures are determined to minimise task time.</p>
2. Remove seat	<p>2.1. Information is accessed and interpreted.</p> <p>2.2. Removal procedures are carried out in accordance with manufacturer/component supplier procedures.</p> <p>2.3. Removal procedures are completed within established industry and enterprise guidelines.</p> <p>2.4. Removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Remove seat trim and padding	<p>3.1. Information is accessed and interpreted.</p> <p>3.2. Removal procedures are carried out in accordance with manufacturer/component supplier procedures.</p> <p>3.3. Removal procedures are completed within established industry and enterprise guidelines.</p> <p>3.4. Removal activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Repair seat frame	<p>4.1. Information is accessed and interpreted.</p> <p>4.2. Repairs are completed using tooling and equipment.</p> <p>4.3. Repairs are carried out in accordance within established industry and enterprise practices and guidelines.</p> <p>4.4. Repair processes and materials meet manufacturer/component supplier standards and road worthy requirements.</p> <p>4.5. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
5. Refit and adjust seat trim and padding	<p>5.1. Information is accessed and interpreted.</p> <p>5.2. Refitting procedures are carried out in accordance with manufacturer/component supplier procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>5.3.Refitting and adjustment procedures are completed within established industry and enterprise guidelines.</p> <p>5.4.Refitting and adjustment activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
6. Reinstall seat	<p>6.1.Information is accessed and interpreted from manufacturer/component supplier procedures.</p> <p>6.2.Reinstallation procedures are carried out in accordance with manufacturer/component supplier procedures.</p> <p>6.3.Reinstallation and testing procedures are completed within established industry and enterprise guidelines.</p> <p>6.4.Reinstallation and testing activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
7. Clean up work area and maintain equipment	<p>7.1.Material that can be reused is collected and stored.</p> <p>7.2.Waste and scrap is removed following workplace procedure.</p> <p>7.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>7.4.Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>7.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>7.6.Tooling and equipment is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for seat and trim removal and reinstalling/refitting, and frame repair procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete tests and measurements to determine repair requirements
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform trimming activities
- problem-solving skills for a range of differing procedural issues
- use workplace technology related to repair of seat frames, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- material safety requirements/material safety data sheets
- technical and legal requirements and implications/ roadworthy requirements
- manufacturer/component supplier/company policies
- types of vehicle seating and their application, including function, properties, application, handling and maintenance
- vehicle seating construction, including component types, spring and suspension systems
- seat removal and replacement methods and safety requirements
- seat dismantling and assembling, including trim, padding, springs, runners, recliners and refitting and adjustment procedures
- types and use of various frame repair materials
- seat frame repair, reinforcing and testing procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing a range of seat removal and reinstallation tasks
- completing a range of trim and padding removal, refitting and adjustment tasks
- completing a range of seat frame repair and testing tasks.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to repair of seat frames
- equipment, hand and power tooling appropriate to repair of seat frames
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project related conditions and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods are to include dismantling, assembling, reinforcing, removing, refitting, welding, riveting, cutting, forming and bolting.
<b>Seat frames</b>	Seat frames may be in marine craft, aircraft, heavy vehicle and equipment.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment,

<b>RANGE STATEMENT</b>	
	use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power/ air tooling, specialist tooling for trim/cover removal and refitting, seat dismantling/assembling, staple gun, clamps, pop rivet kit, punch and die set, hog ring pliers, hacksaw, sander, staple and tack remover, attachments, W ferrules, zig zag spring and spring

<b>RANGE STATEMENT</b>	
	edge wire.
<b>Materials</b>	Materials may include wire electrodes, metals, sealants, paint, argon/CO <sub>2</sub> , elastic webbing, foam, high-density foam, spare parts and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to repair of seat frames</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Trimming and Upholstery
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## AURVTT3012 Carry out sewing operations

### Modification History

Release	Comment
Release 1	Replaces AURV331108A Carry out sewing operations Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out sewing operations, including hand and machine procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, carrying out hand and machine sewing procedures, maintaining equipment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine the job requirements, including method, process and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal safety needs, are observed throughout the work.</p> <p>1.4. Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.5. Procedures are determined to minimise task time.</p>
2. Carry out hand sewing procedures	<p>2.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>2.2. All sewing procedures are carried out in accordance with workplace/industry standard practices.</p> <p>2.3. All sewing procedures are completed within established industry/enterprise guidelines.</p> <p>2.4. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
3. Carry out machine sewing procedures	<p>3.1. Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>3.2. All sewing procedures are carried out in accordance with workplace/industry practices and manufacturer/component supplier specifications.</p> <p>3.3. All sewing procedures are completed within established industry/enterprise guidelines.</p> <p>3.4. All activities are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap is removed following workplace procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	4.6.Tooling and equipment is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for hand and machine sewing operations
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications
- research and interpretive skills to locate, interpret and apply operational and safety information
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- questioning and active listening skills, for example when obtaining information regarding sewing procedures and equipment operation
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete tests and measurements to determine sewing requirements
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- manipulative and dexterity skills to perform sewing operations
- problem solving skills for a range of differing procedural issues
- use workplace technology related to carrying out sewing operations, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- technical information
- equipment operation and safety requirements
- manufacturer/component supplier/company policies
- material matching procedures

**REQUIRED SKILLS AND KNOWLEDGE**

- machine sewing procedures
- hand sewing procedures
- sewing methods appropriate to various material types
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting methods (i.e. hand or machine sewing)
- matching materials
- hand sewing a range of products
- machine sewing a range of products.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to carrying out sewing operations
- equipment, hand and power tooling appropriate to carrying out sewing operations
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with

**EVIDENCE GUIDE**

	<p>questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods are to include hand sewing, machine sewing, tufting, buttoning, matching of materials, measuring, cutting and overlocking.
<b>Sewing</b>	Sewing may be required for components in recreational equipment, marine craft, aircraft, heavy vehicle, plant and agricultural equipment.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and

<b>RANGE STATEMENT</b>	
	clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power/ air tooling, and specialist tooling for dismantling/ assembly, sewing machine, scissors, needles, knives, straight edge, tape and square.
<b>Materials</b>	Materials may include spare parts, lubricants and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to carrying out sewing operations</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT3013 Fabricate loose and fitted covers

### Modification History

Release	Comment
Release 1	<p>Replaces AURV331423AA Fabricate and install loose and fitted covers</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to fabricate (measure, mark out, cut and make up/assemble) and install loose and fitted covers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, measuring, marking out and cutting loose and fitted covers, assembling, installing and fastening loose and fitted covers and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for fabrication work	<p>1.1.Information for work is accessed from manufacturer/component supplier specifications and interpreted.</p> <p>1.2.WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.3.Materials are selected and inspected for quality.</p> <p>1.4.Components, tooling and equipment for fabrication are identified, selected and prepared in accordance with worksite procedures.</p> <p>1.5.Procedures are determined to minimise waste material.</p> <p>1.6.Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure, mark out and cut loose and fitted covers	<p>2.1.Information for measuring, marking out and cutting is interpreted and followed.</p> <p>2.2.Measurements are accessed from manufacturer/component supplier specifications and/or directly measured fitting requirements.</p> <p>2.3.Marking out and cutting are carried out and completed in accordance with work plan and specifications.</p> <p>2.4.Measurements, marking out and cutting are checked for conformity to specifications in accordance with worksite procedures.</p>
3. Make up/assemble loose and fitted covers	<p>3.1.Information for following production process is accessed from manufacturer/component supplier specifications, interpreted and followed.</p> <p>3.2.Make up/assembly of loose and fitted covers is carried out and completed in accordance with work plan and specifications.</p> <p>3.3.Damage to equipment or machinery is avoided.</p> <p>3.4.Production is checked for conformity to specifications in accordance with worksite procedures.</p>
4. Install and fasten loose and fitted covers	<p>4.1.Information for installation and fastening is interpreted and followed.</p> <p>4.2.Installation and fastening processes and methods are accessed from manufacturer/component supplier specifications and/or determined from existing fitting.</p> <p>4.3.Installation and fastenings are checked for</p>

ELEMENT	PERFORMANCE CRITERIA
	conformity to manufacturer/component supplier specifications and vehicle operational requirements.
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Waste and scrap is removed following workplace procedure.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for fabricating and installing loose and fitted covers
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to:
  - access, interpret and apply technical information
  - use tooling and equipment and fabricate and install loose and fitted covers

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements and personal safety requirements
- equipment safety requirements
- types of covers, materials and their application
- fastener types, application and positioning
- adhesives and glues/material safety data information
- production methods and procedures, including planning, measuring, marking out, cutting and making up/assembling of loose and fitted covers
- fastening and fitting procedures
- technical information
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting and communicating task information
- operating machinery
- measuring, marking out, cutting and making up/ assembling loose and fitted covers
- following production processes
- monitoring production processes and outputs
- completing post-activity housekeeping.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to fabrication and installation of loose and fitted covers
- equipment, hand and power tooling appropriate to fabrication and installation of loose and fitted covers
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods may include:</p> <ul style="list-style-type: none"> <li>material selection, estimation of quantity</li> <li>hand sewing, machine sewing, measuring, marking out, cutting, mechanical fastening, shaping, bonding, gluing, assembling and fitting.</li> </ul>
<b>Variables</b>	Other variables may include recreational equipment, marine craft, aircraft, heavy vehicles, trailers, plant and agricultural equipment.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid

<b>RANGE STATEMENT</b>	
	requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, air tooling, specialist tooling, sewing machines, needles, cutting equipment (scissors, knives), measuring and marking-out equipment (straight edge, tape, square, chalk).
<b>Materials</b>	Materials may include thread, fasteners, rope, zippers/ slides, adhesives, glues, plastic products, fabric, canvas and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to fabrication and installation of loose and fitted covers</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Trimming and Upholster
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## AURVTT3014 Fabricate marine covers

### Modification History

Release	Comment
Release 1	Replaces AURV331423BA Fabricate and install marine covers Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to fabricate (measure, mark out, cut and make up/assemble) and install marine covers.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, measuring, marking out, cutting, assembling, installing and fastening marine covers and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for fabrication work	<p>1.1.Information for work is accessed from manufacturer/component supplier specifications and interpreted.</p> <p>1.2.WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.3.Materials are selected and inspected for quality.</p> <p>1.4.Components, tooling and equipment for fabrication are identified, selected and prepared in accordance with worksite procedures.</p> <p>1.5.Procedures are determined to minimise waste material.</p> <p>1.6.Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure, mark out and cut marine covers	<p>2.1.Information for measuring, marking out and cutting is interpreted and followed.</p> <p>2.2.Measurements are accessed from manufacturer/component supplier specifications and/or directly measured fitting requirements.</p> <p>2.3.Marking out and cutting are carried out and completed in accordance with work plan and specifications.</p> <p>2.4.Measurements, marking out and cutting are checked for conformity to specifications in accordance with worksite procedures.</p>
3. Make up/assemble marine covers	<p>3.1.Information for following production process is accessed from manufacturer/component supplier specifications, interpreted and followed.</p> <p>3.2.Make up/assembly of loose and fitted covers is carried out and completed in accordance with work plan and specifications.</p> <p>3.3.Damage to equipment or machinery is avoided.</p> <p>3.4.Production is checked for conformity to specifications in accordance with worksite procedures.</p>
4. Install and fasten marine coverings	<p>4.1.Information for installation and fastening is interpreted and followed.</p> <p>4.2.Installation and fastening processes and methods are accessed from manufacturer/component supplier specifications and/or determined from existing fitting.</p> <p>4.3.Installation and fastenings are checked for</p>

ELEMENT	PERFORMANCE CRITERIA
	conformity to manufacturer/component supplier specifications and vehicle operational requirements.
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Waste and scrap is removed following workplace procedure.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for fabricating and installing marine covers
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to access, interpret and apply technical information, use tooling and equipment, and fabricate and install marine covers

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements and personal safety requirements
- equipment safety requirements
- types of cover materials and their application to marine craft
- adhesives/glues/material safety data sheets information
- production methods and procedures, including measuring, marking out, cutting and make up/ assembly of floor coverings
- technical information
- work organisation and planning processes
- enterprise quality procedures

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• applying WHS policy and procedures</li> <li>• operating equipment/machinery</li> <li>• measuring, marking out, cutting and making up/ assembling loose and fitted covers</li> <li>• following production processes</li> <li>• monitoring production processes and outputs</li> <li>• completing post-activity housekeeping.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• materials relevant to fabrication and installation of marine covers</li> <li>• equipment, hand and power tooling appropriate to fabrication and installation of marine covers</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&amp;R Training</li> </ul>

**EVIDENCE GUIDE**

	<p>Package.</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods may include:</p> <ul style="list-style-type: none"> <li>calculating quantities</li> <li>removal, replacement, assembling, fitting and installation</li> <li>hand sewing, machine sewing, fluting, unpicking, measuring, fitting, marking out, cutting, fastening, over-locking, shaping, bonding, gluing.</li> </ul>
<b>Variables</b>	Other variables may include recreational equipment.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment,

<b>RANGE STATEMENT</b>	
	extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, air tooling, specialist tooling, sewing machines, needles, reels, cutting equipment (scissors, knives), measuring equipment (straight edge, tape, square, chalk), and marking out equipment.
<b>Materials</b>	Materials may include thread, adhesives, glues, contact cement, vinyl, fabric, calico, foam, composite materials, fasteners and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to fabrication and installation of marine covers</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian</li> </ul>

**RANGE STATEMENT**

	<p>Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT3015 Fabricate canvas products

### Modification History

Release	Comment
Release 1	Replaces AURV331423CA Fabricate and install canvas products Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence required to fabricate and install canvas products and covers.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	The unit includes identification and confirmation of work requirement, preparation for work, measuring, marking out, cutting out, assembling and installing canvas products and completion of work finalisation processes, including clean-up and documentation  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for fabrication work	<p>1.1.Information for work is accessed from manufacturer/component supplier specifications and interpreted.</p> <p>1.2.WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.3.Materials are selected and inspected for quality.</p> <p>1.4.Components, tooling and equipment for fabrication are identified, selected and prepared in accordance with worksite procedures.</p> <p>1.5.Procedures are determined to minimise waste material.</p> <p>1.6.Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure, mark out and cut canvas products	<p>2.1.Information for measuring, marking out and cutting is interpreted and followed.</p> <p>2.2.Measurements are accessed from manufacturer/component supplier specifications and/or directly measured fitting requirements.</p> <p>2.3.Marking out and cutting are carried out and completed in accordance with work plan and specifications.</p> <p>2.4.Measurements, marking out and cutting are checked for conformity to specifications in accordance with worksite procedures.</p>
3. Make up/assemble canvas products	<p>3.1.Information for following production process is accessed from manufacturer/component supplier specifications, interpreted and followed.</p> <p>3.2.Make up/assembly of canvas products is carried out and completed in accordance with work plan and specifications.</p> <p>3.3.Damage to equipment or machinery is avoided.</p> <p>3.4.Production is checked for conformity to specifications in accordance with worksite procedures.</p>
4. Install canvas products	<p>4.1.Information for installing is interpreted and applied.</p> <p>4.2.Installing is carried out to enterprise and/or manufacturer/ component supplier specifications.</p> <p>4.3.Installing is carried out without damage to equipment.</p>
5. Clean up work area and maintain	<p>5.1.Material that can be reused is collected and stored.</p>

ELEMENT	PERFORMANCE CRITERIA
equipment	<p>5.2.Waste and scrap is removed following workplace procedures.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for fabricating and installing canvas products
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to accessing, interpreting and applying technical information and using tooling and equipment, and fabricating and installing canvas products

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements and personal safety requirements
- equipment safety requirements
- types, characteristics and applications of canvas
- adhesives/glues/material safety data sheets information
- job planning and drawing
- production methods and procedures, including measuring, marking out, cutting and make up/assembly of canvas products
- installation processes and techniques
- technical information
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- applying WHS policy and procedures
- operating machinery
- measuring, marking out, cutting and making up/ assembling a range of canvas products
- installing a range of canvas products
- completing post-activity housekeeping.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to fabricating and installing canvas products
- equipment, hand and power tooling appropriate to fabricating and installing canvas products
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.

**EVIDENCE GUIDE**

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	Methods are to include: <ul style="list-style-type: none"> <li>• quantity estimation, canvas selection</li> <li>• hand sewing, machine sewing</li> <li>• measuring, marking out, cutting, reinforcing, edge finishing, mechanical fastening, shaping, bonding, gluing, assembling and installing.</li> </ul>
<b>Canvas products/covers</b>	Canvas products/covers may be for recreational equipment, marine craft, aircraft, heavy vehicles, plant and agricultural equipment.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid

<b>RANGE STATEMENT</b>	
	requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, air tooling, specialist tooling, sewing machines, needles, cutting equipment (scissors, knives), measuring and marking out equipment (straight edge, tape, square, chalk).
<b>Materials</b>	Materials may include adhesives, glues, canvas, thread, rope, window fabric, jute webbing, sailtrack, fasteners and zipper/slides.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to fabricating and installing canvas products</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> </ul>

RANGE STATEMENT	
	<ul style="list-style-type: none"><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Trimming and Upholstery
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## AURVTT3016 Fabricate frame structures

### Modification History

Release	Comment
Release 1	Replaces AURV331423DA Fabricate and install frame structures Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence required to fabricate (measure, select material and attachments, cut, make up/assemble and fit) and install frame structures.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	The unit includes identification and confirmation of work requirement, preparation for work, measuring frame requirements, selecting materials, assembling, fitting and installation of frame structure and completion of work finalisation processes, including clean-up and documentation.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for fabrication work	<p>1.1.Information for work is accessed from manufacturer/ component supplier specifications and interpreted.</p> <p>1.2.WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.3.Materials are selected and inspected for quality.</p> <p>1.4.Components, tooling and equipment for fabrication are identified, selected and prepared in accordance with worksite procedures.</p> <p>1.5.Procedures are determined to minimise waste material.</p> <p>1.6.Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure job and determine frame requirements	<p>2.1.Information for measuring and determining frame requirements is interpreted and followed.</p> <p>2.2.Measurements are accessed from manufacturer/component supplier specifications and/or from directly measured fitting requirements.</p> <p>2.3.Frame dimensions are confirmed against job/customer requirements.</p>
3. Select frame materials and attachments/joiners	<p>3.1.Information for selection of materials and attachments/ joiners is interpreted and followed.</p> <p>3.2.Materials type and size are selected according to frame dimension, in-service environment and customer requirements.</p> <p>3.3.Attachment methods and materials are selected according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
4. Cut materials, fit frame attachments/joiners and assemble frame	<p>4.1.Information for cutting materials, fitting of attachments/ joiners and assembly is interpreted and followed.</p> <p>4.2.Tooling and equipment are used for cutting and fitting attachments/joiners.</p> <p>4.3.Cutting, attachment/joiner fitting and assembly is carried out and completed in accordance with work plan and specifications.</p> <p>4.4.Component lengths, fittings and frame assembly dimensions are checked for conformity to specifications in accordance with worksite procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>4.5.All cutting, fitting and assembly operations are carried out according to industry regulations/guidelines, WHS legislation, and enterprise procedures/policies.</p>
<p>5. Fit fabricated frame structure</p>	<p>5.1.Fitting is completed without causing damage to equipment, component/system or machinery.</p> <p>5.2.Information for fitting fabricated frame is interpreted and followed.</p> <p>5.3.Frame fitting is carried out and completed in accordance with work plan and specifications.</p> <p>5.4.Production is checked for conformity to specifications in accordance with worksite procedures.</p>
<p>6. Install and fasten frame structure</p>	<p>6.1.Information for installation and fastening is interpreted and followed.</p> <p>6.2.Installation and fastening processes and methods are accessed from manufacturer/component supplier specifications and/or determined from existing fitting.</p> <p>6.3.Installation and fastenings are checked for conformity to manufacturer/component supplier specifications and vehicle operational requirements.</p>
<p>7. Clean up work area and maintain equipment</p>	<p>7.1.Material that can be reused is collected and stored.</p> <p>7.2.Waste and scrap is removed following workplace procedure.</p> <p>7.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>7.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>7.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>7.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for fabricating and installing frame structures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for work
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to fabrication and installation of frame structures, including the use of measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements and personal safety requirements
- technical information
- equipment safety requirements/operation of tube bending and wire swaging equipment
- types of frames, fittings and fasteners
- frame positioning and fixing methods and procedures
- types of frame materials and their application
- production methods and procedures, including frame design, material and hardware selection, measuring, cutting and assembly/fitting up
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- fabricating a range of frame structures following production processes
- measuring job and determining frame requirements
- selecting frame materials and attachments
- assembling and fitting/attaching frame
- monitoring production processes, specifications and outputs
- completing post-activity housekeeping.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to fabrication and installation of frame structures
- equipment, hand and power tooling appropriate to fabrication and installation of frame structures
- activities covering mandatory task requirements
- specifications and work instructions.

**EVIDENCE GUIDE****Method of assessment**

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Methods</b>	<p>Methods are to include:</p> <ul style="list-style-type: none"> <li>material selection, measuring, cutting, mechanical fastening, wire swaging, shaping, bending, riveting, and fitting</li> <li>dismantling, assembling, fitting, fixing.</li> </ul>
<b>Frame structures</b>	Frame structures may be those in recreational equipment, marine craft, aircraft, heavy vehicles, plant and agricultural equipment.
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, air tooling, specialist tooling, rivet gun and rivets, machines, drills, cutting equipment, measuring and assembly equipment (straight edge, tape, square).
<b>Materials</b>	Materials may include stainless steel hardware, bow sets, fasteners, stainless steel wire and tube, and aluminium tube.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to fabrication and installation of frame structures</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>requirements</li><li>instructions issued by authorised enterprise or external persons</li><li>Australian Standards.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT3017 Fabricate and install floor coverings

### Modification History

Release	Comment
Release 1	Replaces AURV331423EA Fabricate and install floor coverings Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to fabricate (measure, mark out, cut and make up/assemble) and install floor coverings.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, measuring, marking out and cutting, assembling, installing and fastening of vehicle floor coverings and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for fabrication work	<p>1.1.Information for work is accessed from manufacturer/component supplier specifications and interpreted.</p> <p>1.2.WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.3.Materials are selected and inspected for quality.</p> <p>1.4.Components, tooling and equipment for fabrication and installation are identified, selected and prepared in accordance with worksite procedures.</p> <p>1.5.Procedures are determined to minimise waste material.</p> <p>1.6.Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure, mark out and cut floor coverings material	<p>2.1.Information for measuring, marking out and cutting is interpreted and followed.</p> <p>2.2.Measurements are accessed from manufacturer/component supplier specifications and/or directly measured fitting requirements.</p> <p>2.3.Marking out and cutting are carried out and completed in accordance with work plan and specifications.</p> <p>2.4.Measurements, marking out and cutting are checked for conformity to specifications in accordance with worksite procedures.</p>
3. Make up/assemble floor coverings	<p>3.1.Information for following production processes is accessed from manufacturer/component supplier specifications, interpreted and followed.</p> <p>3.2.Make up/assembly of floor coverings is carried out and completed in accordance with work plan and specifications.</p> <p>3.3.Damage to equipment or machinery is avoided.</p> <p>3.4.Production is checked for conformity to specifications in accordance with worksite procedures.</p>
4. Install and fasten vehicle floor coverings	<p>4.1.Information for installation and fastening is interpreted and followed.</p> <p>4.2.Installation and fastening processes and methods are accessed from manufacturer/component supplier specifications and/or determined from existing fitting.</p> <p>4.3.Installation and fastenings are checked for</p>

ELEMENT	PERFORMANCE CRITERIA
	conformity to manufacturer/component supplier specifications and vehicle operational requirements.
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Waste and scrap is removed following workplace procedure.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for fabricating and installing vehicle floor coverings
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to fabrication and installation of floor coverings, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements and personal safety requirements
- vehicle and equipment safety requirements
- technical information/regulations types of floor covering materials and their application
- adhesives/glues/material safety data sheets information
- production methods and procedures, including selection, measuring, marking out, cutting and make up/ assembly of floor coverings (including sewing, joining and finishing)
- floor covering installation and fastening methods and procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- measuring, marking out, cutting and making up/ assembling vehicle floor coverings
- installing and fastening a range of vehicle floor coverings
- completing post-activity housekeeping.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to fabrication and installation of floor coverings
- equipment, hand and power tooling appropriate to fabrication and installation of floor coverings
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

**EVIDENCE GUIDE**

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Floor coverings</b>	Floor coverings may be in recreational equipment, marine craft, aircraft, heavy vehicles, plant and agricultural equipment.
<b>Methods</b>	Methods are to include: <ul style="list-style-type: none"> <li>material selection, calculation and estimation of quantities</li> <li>measuring, marking out, cutting, hand sewing, machine sewing, overlocking, fastening, shaping, joining, finishing, bonding, gluing, assembling and fitting.</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment,

<b>RANGE STATEMENT</b>	
	extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, air tooling, specialist tooling, sewing machines, needles, cutting equipment (scissors, knives), measuring equipment (straight edge, tape, square, chalk) and marking out equipment.
<b>Materials</b>	Materials may include adhesives, glues, contact cement, thread, reels, composite materials, rubber matting, heel mats, carpet, plastofelt, underfelt/lofted wadding and binding tape.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to fabrication and installation of floor coverings</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian</li> </ul>

**RANGE STATEMENT**

	<p>Design Rules</p> <ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT3018 Fabricate and install soft tops hoods

### Modification History

Release	Comment
Release 1	Replaces AURV331423FA Fabricate and install hoods (soft tops) Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to fabricate (measure, mark out, cut and make up/assemble) and install vehicle hoods (soft tops).</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, measuring, marking out and cutting, assembling, installing and fastening vehicle hood (soft top) and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for fabrication work	<p>1.1.Information for work is accessed from manufacturer/component supplier specifications and interpreted.</p> <p>1.2.WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.3.Materials are selected and inspected for quality.</p> <p>1.4.Components, tooling and equipment for fabrication and installation are identified, selected and prepared in accordance with worksite procedures.</p> <p>1.5.Procedures are determined to minimise waste material.</p> <p>1.6.Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Measure, mark out and cut vehicle hood (soft top)	<p>2.1.Information for measuring, marking out and cutting is interpreted and followed.</p> <p>2.2.Measurements are accessed from manufacturer/component supplier specifications and/or directly measured fitting requirements.</p> <p>2.3.Marking out and cutting are carried out and completed in accordance with work plan and specifications.</p> <p>2.4.Measurements, marking out and cutting are checked for conformity to specifications in accordance with worksite procedures.</p>
3. Make up/assemble vehicle hood (soft top)	<p>3.1.Information for following production processes is accessed from manufacturer/component supplier specifications, interpreted and followed.</p> <p>3.2.Make up/assembly of hood (soft top) is carried out and completed in accordance with work plan and specifications.</p> <p>3.3.Damage to equipment or machinery is avoided.</p> <p>3.4.Production is checked for conformity to specifications in accordance with worksite procedures.</p>
4. Install and fasten vehicle hood (soft top)	<p>4.1.Information for installation and fastening is interpreted and followed.</p> <p>4.2.Installation and fastening processes and methods are accessed from manufacturer/component supplier specifications and/or determined from existing fitting.</p> <p>4.3.Installation and fastenings are checked for</p>

ELEMENT	PERFORMANCE CRITERIA
	conformity to manufacturer/component supplier specifications and vehicle operational requirements.
5. Clean up work area and maintain equipment	<p>5.1. Material that can be reused is collected and stored.</p> <p>5.2. Waste and scrap is removed following workplace procedure.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for fabricating and installing vehicle hoods (soft tops)
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to fabrication and installation of hoods (soft tops), including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements and personal safety requirements
- vehicle and equipment safety requirements
- technical information types of hoods (soft tops), materials and frames
- hood and soft top operation and components parts
- types of windows
- production methods, procedures, including measuring, marking out, cutting and making up/assembling (including sewing, joining and finishing)
- window fitting methods and procedures
- hood (soft top) installation and fastening methods and procedures, including vehicle preparation
- adhesives/glues/material safety data sheets information
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- measuring, marking out, cutting and making up/ assembling vehicle hoods (soft tops)
- installing and fastening a range of vehicle hoods (soft tops)
- completing post-activity housekeeping.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to fabrication and installation of hoods (soft tops)
- equipment, hand and power tooling appropriate to fabrication and installation of hoods (soft tops)
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of

**EVIDENCE GUIDE**

	<p>underpinning knowledge.</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.

<b>RANGE STATEMENT</b>	
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, air tooling, specialist tooling, sewing machines, needles, cutting equipment (scissors, knives), measuring and marking out equipment (straight edge, tape, square, chalk).
<b>Materials</b>	Materials may include adhesives, glues, contact cement, vinyl, fabric, thread, reels, clear plastic, composite materials and fasteners.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to fabrication and installation of hoods (soft tops)</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT3019 Fabricate and install canopies and curtains

### Modification History

Release	Comment
Release 1	<p>Replaces AURV331423GA Fabricate and install canopies and curtains</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to fabricate (measure, mark out, cut and make up/assemble) and install canopies and curtains.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, measuring, marking out, cutting, assembling, installing and fastening canopies and curtains and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for fabrication work	<p>1.1.Information for work is accessed from manufacturer/component supplier specifications and interpreted.</p> <p>1.2.WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.3.Materials are selected and inspected for quality.</p> <p>1.4.Components, tooling and equipment for fabrication are identified, selected and prepared in accordance with worksite procedures.</p> <p>1.5.Procedures to minimise waste material are determined.</p> <p>1.6.Procedures for maximising energy efficiency while completing the job are identified.</p>
2. Measure, mark out and cut canopies and curtains	<p>2.1.Information for measuring, marking out and cutting is interpreted and followed.</p> <p>2.2.Measurements are accessed from manufacturer/component supplier specifications and/or directly measured fitting requirements.</p> <p>2.3.Marking out and cutting are carried out and completed in accordance with work plan and specifications.</p> <p>2.4.Measurements, marking out and cutting are checked for conformity to specifications and customer requirements in accordance with worksite procedures.</p>
3. Make up/assemble canopies and curtains	<p>3.1.Production process information is accessed from manufacturer/component supplier specifications and workplace procedures and is interpreted and followed.</p> <p>3.2.Make up/assembly of canopies and curtains is carried out and completed in accordance with work plan and specifications.</p> <p>3.3.Damage to equipment or machinery is avoided.</p> <p>3.4.Production is checked for conformity to specifications in accordance with worksite procedures.</p>
4. Install and fasten canopies and curtains	<p>4.1.Information for installation and fastening is interpreted and followed.</p> <p>4.2.Installation and fastening processes and methods are accessed from manufacturer/component supplier specifications and/or determined from existing</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>fitting.</p> <p>4.3.Installation and fastenings are checked for conformity to manufacturer/component supplier specifications and vehicle operational requirements.</p>
5. Clean up work area and maintain equipment	<p>5.1.Material that can be reused is collected and stored.</p> <p>5.2.Waste and scrap is removed following workplace procedure.</p> <p>5.3.Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4.Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>5.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6.Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for fabricating and installing canopies and curtains
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and materials to avoid backtracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to complete measurements and estimate material requirements for the work
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use workplace technology related to fabrication and installation of canopies and curtains, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements and personal safety requirements
- equipment safety requirements
- technical information types of canopy and curtain materials and their application
- adhesives/glues/material safety data sheets information
- sewing procedures, including seams, binding and pockets
- production methods and procedures, including planning, measuring, trade drawing, marking out, cutting and making up/assembling
- fitting and fastening/attachment methods, processes, procedures and applications
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- fabricating canopies and curtains/following production processes
- measuring, marking out, cutting and making up/ assembling canopies and curtains
- fitting and fixing a range of canopies and curtains
- completing post-activity housekeeping.

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to fabrication and installation of canopies and curtains
- equipment, hand and power tooling appropriate to fabrication and installation of canopies and curtains
- activities covering mandatory task requirements
- specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and

**EVIDENCE GUIDE**

	<p>accuracy of performance together with application of underpinning knowledge.</p> <ul style="list-style-type: none"><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.

<b>RANGE STATEMENT</b>	
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, power tooling, air tooling, specialist tooling, sewing machines, needles, cutting equipment (scissors, knives), measuring and marking out equipment, (straight edge, tape, square, chalk).
<b>Materials</b>	Materials may include adhesives, glues, bow sets, fasteners, thread, vinyl, fabric, canvas, plastic products and binding roll.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"><li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li><li>• safe work procedures related to fabrication and installation of canopies and curtains</li><li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Trimming and Upholstery
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## AURVTT3020 Select and use leather in trimming

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to identify, select and use leather in a vehicle trimming environment.</p> <p>The unit involves establishing work requirements; preparing for the task; identifying and performing leather calculations and leather matching; understanding the leather tanning process; measuring, cutting, fabricating and attaching leather covers and trim to vehicle components; and clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to light and heavy vehicles, mobile plant and equipment, marine, motorcycles and recreational vehicles as well as aircraft.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions, <i>information and documents</i> are used to determine job requirements, including method, process and equipment</p> <p>1.2. <i>Workplace health and safety (WHS) requirements</i>, including <i>personal protective equipment</i> (PPE) and safety needs, are observed throughout the work</p> <p>1.3. Leather is selected and <i>checked</i> and quantities are calculated</p> <p>1.4. Appropriate <i>tools and equipment</i> are selected and checked for safe operation</p> <p>1.5. Appropriate trimming <i>materials</i> are selected and checked for quality</p> <p>1.6. Workplace <i>emergency procedures</i> are identified and followed when required</p>
2. Cut, fit and check leather	<p>2.1. <i>Leather characteristics</i> and types are identified and inspected</p> <p>2.2. Leather pieces are laid out in sequence according to developed cutting plan</p> <p>2.3. Leather pieces are cut according to vehicle plan using predetermined measurements or pattern</p> <p>2.4. Leather is worked to produce required range of trimming components for particular application</p> <p>2.5. Leather pieces are applied in line with particular application, ensuring appropriate leather is fitted to high-wear areas and trimmed components</p> <p>2.6. Leather is positioned and checked prior to being attached to ensure correct fit</p>
3. Attach leather to vehicle or component	<p>3.1. Leather is secured using appropriate fixing and <i>attaching procedures</i> according to manufacturer and component supplier specifications</p> <p>3.2. Leather is attached according to industry guidelines, WHS requirements, and <i>legislative and workplace policies and procedures</i></p>
4. Clean up work area and maintain equipment	<p>4.1. Leather material that can be reused is collected and stored according to workplace sustainability practices</p> <p>4.2. Waste and scrap leather are removed following workplace procedures</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>4.4. Faulty equipment is identified and tagged according to</p>

	<p>workplace requirements</p> <p>4.5.Operator maintenance is completed according to manufacturer and component supplier specifications and workplace procedures</p> <p>4.6.Tools and equipment are maintained according to workplace procedures</p>
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## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to communicate ideas and information to:
  - confirm work requirements and specifications
  - coordinate work with supervisor and other workers
  - report work problems
  - follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on cutting plan, written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - obtain and record leather usage and measurements
  - document leather trimming procedure and required parts
- numeracy skills to interpret and apply metric and imperial systems of measurement when preparing material for cutting
- planning and organising skills to:
  - plan leather trimming job requirements following job specification
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate trimming equipment, leather products, materials, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as codes of practice or trimming procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use trimming workplace tools and equipment relating to the manufacture and

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- re-cover of leather trimmed components, including:
  - specialist tools and equipment
  - measuring equipment
  - trim patterns
- technology skills to:
  - operate trimming equipment
  - use technology to collect information on leather types and tanning processes

**Required knowledge**

- WHS and PPE requirements and workplace policies relating to trimming processes
- workplace tools and equipment relating to leather trimming
- leather technical information
- criteria for selecting leather
- techniques for measuring and calculating leather
- leather preparation and application processes
- leather cleaning procedures and equipment
- industry and workplace quality standards relating to trimming leather
- workplace-specific technology required for trimming leather

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- fabricate leather covers and trims
- repair leather covers and trims
- replace leather covers and trims
- adjust leather covers and trims.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- material relevant to carrying out leather trimming activities
- equipment, hand and power tools appropriate to carrying out leather trimming activities
- specifications and work instructions.

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment****Method of assessment**

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### • RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Information and documents</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• verbal, written or graphical</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches</li> <li>• safe work procedures relating to trimming vehicle components</li> <li>• regulatory and legislative requirements relating to trimming in the automotive industry</li> <li>• Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• workplace work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards.</li> </ul>
<p><b><i>Workplace health and safety requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• safe use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<p><b><i>Personal protective equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• safety glasses or goggles</li> <li>• earmuffs or earplugs</li> <li>• safety footwear</li> <li>• protective clothing.</li> </ul>
<p><b><i>Checking</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• contaminants</li> <li>• grain</li> <li>• quality</li> <li>• quantity</li> <li>• size</li> <li>• wear stress.</li> </ul>
<p><b><i>Tools and equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• single or multi-needle flatbed sewing machine</li> <li>• heat-gun</li> <li>• hammer</li> </ul>

## • RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• staple-gun</li> <li>• hog ring pliers</li> <li>• skiving machine</li> <li>• hand sewing needles</li> <li>• hand tools</li> <li>• power or air tools</li> <li>• specialist tools for assembly or dismantling</li> <li>• wad punches</li> <li>• foam cutters</li> <li>• scissors and knives</li> <li>• revolving hole punch</li> <li>• ruler and tape</li> <li>• hand clamps</li> <li>• adhesive-gun</li> <li>• pop rivet kit</li> <li>• punch and die set</li> <li>• door handle remover</li> <li>• hacksaw</li> <li>• sander</li> <li>• staple and tack remover</li> <li>• fluting irons.</li> </ul>
<b>Materials</b> may include:	<ul style="list-style-type: none"> <li>• leather hides</li> <li>• leather patterns</li> <li>• fabrics</li> <li>• cleaning materials</li> <li>• glues</li> <li>• staples</li> <li>• piping.</li> </ul>
<b>Emergency procedures</b> may include:	<ul style="list-style-type: none"> <li>• emergency shutdown</li> <li>• extinguishing fires</li> <li>• workplace first aid requirements</li> <li>• worksite evacuation.</li> </ul>
<b>Leather characteristics</b> may include:	<ul style="list-style-type: none"> <li>• natural markings</li> <li>• finished and unfinished sides</li> <li>• high and low wear</li> </ul>

## • RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> <li>• direction of markings</li> <li>• flaws and blemishes</li> <li>• colour variation between hides</li> <li>• flexibility.</li> </ul>
<i>Attaching procedures</i> may include:	<ul style="list-style-type: none"> <li>• sewing</li> <li>• gluing</li> <li>• riveting</li> <li>• cutting</li> <li>• forming</li> <li>• stapling.</li> </ul>
<i>Legislative and workplace policies and procedures</i> may include:	<ul style="list-style-type: none"> <li>• federal, state or territory, and local authority Acts and regulations</li> <li>• industry code of practice</li> <li>• Australian Design Rules (ADR)</li> <li>• established workplace policies and procedures</li> <li>• workplace or industry quality procedures.</li> </ul>

## Unit Sector(s)

Competency field	Vehicle Body
Unit sector	Technical – Trimming and Upholstery

## Custom Content Section

Not applicable.

## AURVTT3021 Select and use adhesives

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to select adhesives for specific trimming applications and determine methods of attaching materials.</p> <p>The unit involves identifying different adhesives for work requirements, preparing for work, and completing work processes, including clean-up.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to trimming technicians who perform a variety of trimming and upholstery activities to a range of vehicles or components, including marine, motorcycles, aircraft and recreational vehicles.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions and job specification are read and interpreted to determine job requirements, including adhesive types and attachment <i>method</i></p> <p>1.2. <i>Workplace health and safety (WHS) requirements</i>, including <i>personal protective equipment (PPE)</i> needs, are observed and addressed</p> <p>1.3. Tools and equipment are identified, sourced and checked for safe and effective operation</p> <p>1.4. <i>Emergency procedures</i> and equipment are identified</p> <p>1.5. <i>Information</i> is accessed and interpreted from adhesive manufacturer specifications</p> <p>1.6. <i>Material</i> applications and usage are compared with job requirements</p>
2. Select adhesives	<p>2.1. Material safety data sheet (MSDS) information is sourced and interpreted</p> <p>2.2. Adhesives appropriate for the task are selected, following <i>environmental, statutory and regulatory authority requirements</i></p>
3. Prepare surfaces and apply adhesive	<p>3.1. Surface and adhesive preparation is carried out according to adhesive manufacturer specifications</p> <p>3.2. Adhesives are applied without causing damage to components or systems and in line with industry regulations and guidelines, WHS requirements and workplace procedures</p>
4. Clean up work area and maintain equipment	<p>4.1. Adhesives and materials that can be reused are collected and stored according to workplace sustainability practices</p> <p>4.2. Waste and scrap are removed following workplace procedure</p> <p>4.3. Equipment and work areas are cleaned and inspected for serviceable condition according to workplace procedures</p> <p>4.4. Faulty equipment is identified and tagged according to workplace requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand skills, knowledge and understanding
- literacy skills to:
  - read and follow information in written job instructions, quality procedures, specifications, standard operating procedures, charts, lists, drawings and other reference documents
  - document adhesive procedures and required parts
- numeracy skills to calculate surface area and adhesive requirements
- planning and organising skills to:
  - plan, use and follow job specifications when using adhesives
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate attaching equipment, adhesives, materials, processes and procedures
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as codes of practice and attaching procedures
- technical skills to:
  - use adhesive attaching workplace tools and equipment relating to the manufacture and re-covering of leather trimmed components, including the use of adhesives, specialist tools and equipment
- technology skills to:
  - adapt to the use of adhesives and workplace tools and equipment
  - operate adhesive attaching equipment
  - use technology to collect and provide information on adhesive types

#### Required knowledge

- WHS and personal safety requirements

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- adhesive application equipment
- technical information relating to adhesive use
- MSDS and product safety requirements
- adhesive manufacturer specifications
- adhesive selection, preparation and application procedures
- procedures for the safe use of adhesive cleaning materials
- workplace quality processes relating to selecting and applying adhesives in vehicles

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- select and apply a range of fabric adhesives
- follow workplace procedures and requirements as they apply to adhesive, tool and equipment use.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- materials relevant to selecting and applying trim and fabric adhesives
- equipment, and hand and power tools appropriate to selecting and applying trim and fabric adhesives
- specifications and work instructions.

#### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

**EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

**Overview of assessment**

this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

<b><i>RANGE STATEMENT</i></b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Method</i></b> may include:	<ul style="list-style-type: none"> <li>• clamping</li> <li>• crimping</li> <li>• gluing</li> <li>• sewing.</li> </ul>
<b><i>Workplace health and safety requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• safe use of tools and equipment</li> <li>• workplace environment, including adequate workstation ventilation</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace first aid equipment</li> <li>• control of hazards and hazardous material and substances.</li> </ul>
<b><i>Personal protective equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• eye protection</li> <li>• personal protective clothing</li> <li>• safety footwear.</li> </ul>
<b><i>Emergency procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• extinguishing fires</li> <li>• workplace first aid requirements</li> <li>• workplace evacuation.</li> </ul>
<b><i>Information</i></b> may include:	<ul style="list-style-type: none"> <li>• verbal, written or graphical instructions</li> <li>• product manufacturer specifications</li> <li>• catalogues</li> <li>• colour charts</li> <li>• vehicle details</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams and sketches.</li> </ul>
<b><i>Materials</i></b> may include:	<ul style="list-style-type: none"> <li>• adhesives</li> <li>• fabric</li> <li>• vinyl</li> <li>• cleaning materials</li> <li>• leather.</li> </ul>
<b><i>Environmental requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• EPA requirements</li> <li>• federal, state or territory environmental regulations</li> <li>• specific environmental considerations for:</li> </ul>

<b><i>RANGE STATEMENT</i></b>	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
	<ul style="list-style-type: none"> <li>• products used in the process</li> <li>• activities undertaken in the process</li> <li>• waste-management regulations</li> <li>• clean-up management.</li> </ul>
<b><i>Statutory and regulatory authorities' requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• federal, state or territory, and local authorities administering Acts</li> <li>• industry regulations</li> <li>• codes of practice</li> <li>• Australian standards.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Trimming and Upholstery

## Custom Content Section

Not applicable.

## AURVTV2001 Remove, replace, fit and test components and accessories

### Modification History

Release	Comment
Release 1	<p>Replaces AURV232165A Remove, replace, fit and test components/accessories</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to remove, replace, fit and test non-electrical automotive components/accessories.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p> <p>This unit does not apply to electrical accessory fitting. For the installation of ancillary electrical equipment refer to AURETR2011 Install and test basic ancillary electrical components .</p>
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## Application of the Unit

<b>Application of the unit</b>	The unit includes identification and confirmation of work requirements, preparation for work, removal and replacement or initial fitting and testing of a range of non-electrical components/accessories, and completion of work finalisation processes, including clean-up and documentation.
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including method, processes and equipment</p> <p>1.2. Job specifications are read and interpreted</p> <p>1.3. Workplace health and safety (WHS) requirements, including personal safety needs, are observed throughout the work</p> <p>1.4. Equipment and tooling are identified and checked for safe and effective operation</p> <p>1.5. Procedures are determined to minimise task time</p>
2. Remove/replace/fit components/accessories	<p>2.1. Information required for the work is accessed from manufacturer/component supplier specifications and interpreted</p> <p>2.2. WHS policies and procedures are observed throughout the work processes</p> <p>2.3. Accessories, tooling and equipment required for the work are identified, selected and prepared in accordance with worksite procedures</p> <p>2.4. Accessories are removed and refitted in accordance with worksite procedures</p> <p>2.5. Accessory removal and refit procedures are carried out in accordance with legislation, industry and enterprise policies/procedures guidelines</p>
3. Test components/accessories	<p>3.1. Information required for testing is accessed from manufacturer/component supplier specifications and interpreted</p> <p>3.2. Components/accessories are tested in accordance with authorised procedures</p> <p>3.3. Testing of accessories is completed without causing damage to component or system</p> <p>3.4. Workplace records are completed in accordance with enterprise procedures</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored</p> <p>4.2. Waste and scrap is removed following workplace procedure</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>requirements</p> <p>4.5.Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures</p> <p>4.6.Tooling and equipment is maintained in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for the identification and analysis of technical information
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the removal, replacement, fitting and testing of components/accessories, including the use of specialist tooling and equipment, measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements, equipment, material and personal safety requirements
- components/accessories application
- range and type and location of commonly used installation and testing procedures
- types and layout of service/repair manuals (hard copy and electronic)
- procedures relevant to the removal, replacement, fitting and testing of a range of accessories
- worksite reporting procedures
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- carrying out removal, replacing and fitting of a range of accessories to workplace and manufacturer/component supplier requirements
- testing accessories
- completing essential post-activity housekeeping.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the removal, replacement, fitting and testing of non-electrical components and accessories
  - equipment, hand and power tooling appropriate to the removal, replacement, fitting and testing of non-electrical components and accessories
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail,

**EVIDENCE GUIDE**

	<p>Service and Repair Training Package.</p> <ul style="list-style-type: none"><li>• Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li><li>• Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Non-electrical accessories

Non-electrical accessories may include:

- roof racks, weather shields, stone protectors, mud flaps, spoilers, bonnet scoops, non-SRS compliant protective bars (e.g. bull bars)

#### Methods

Methods are to include:

- removing, replacing and/or fitting automotive accessories

#### WHS requirements

WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of materials
- use of firefighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

#### Personal protective equipment

Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and practices

#### Safe operating procedures

Safe operating procedures are to include, but are not limited to:

- operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors

#### Emergency procedures

Emergency procedures related to this unit are to

<b>RANGE STATEMENT</b>	
	<p>include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• emergency shutdown and stopping of equipment</li> <li>• extinguishing fires</li> <li>• enterprise first aid requirements</li> <li>• worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal company quality policies and standards</li> <li>• enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>• federal, state/territory and local authorities administering Acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• lifting equipment/jacks and stands</li> <li>• testing equipment</li> <li>• hoists</li> <li>• hand and power tooling</li> <li>• specialised tooling</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• safe work procedures related to application of colour and clear coat refinishing materials</li><li>• regulatory/legislative requirements pertaining to automotive painting and finishing</li><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Accessories
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## AURVTW2001 Carry out manual metal arc welding procedures

### Modification History

Release	Comment
Release 1	Replaces AURV281108A Carry out manual metal arc welding procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	This unit of competency covers the skills and knowledge required to carry out manual metal arc welding procedures. Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

Application of the unit	The unit includes identification and confirmation of work requirement, preparation for work and the completion of welding and work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets, quality and quantity of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials for repairs and replacements are selected and inspected for quality.</p> <p>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</p> <p>1.6. Products are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Carry out manual metal arc procedures	<p>2.1. Information is accessed from sources to enable welding to be performed in accordance with vehicle and equipment manufacturer/component supplier procedures.</p> <p>2.2. Manual metal arc welding is completed using approved methods and equipment, according to type of material and repairs required.</p> <p>2.3. Manual metal arc welding procedures are completed without causing damage to component or system.</p> <p>2.4. Manual metal arc welding is carried out according to a standard that meets industry regulations/guidelines, WHS requirements, legislation and enterprise policy/procedures.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedures.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace procedures.</p>



## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for the identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to welding systems, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- common automotive technology
- types of metals
- types of electrodes and their application
- manual metal arc welding procedures
- equipment maintenance procedures
- workplace guidelines regarding acceptable tolerance levels to be considered as per

**REQUIRED SKILLS AND KNOWLEDGE**

- job sheet and manufacturer/component supplier specifications
- procedures for reporting faults and material defects
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- setting up, operating and maintaining manual metal arc welding, safety, lifting and measuring equipment
- completing a range of manual metal arc welding tasks to specification.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to manual metal arc welding
  - equipment, hand and power tooling appropriate to manual metal arc welding
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

<b>EVIDENCE GUIDE</b>	
	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"> <li>Assessment may be applied under project-related conditions and require evidence of process.</li> </ul>
<b>Guidance information for assessment</b>	<ul style="list-style-type: none"> <li>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</li> <li>Assessment may be applied under project-related conditions and require evidence of process.</li> <li>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li> <li>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Overview of assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Manual metal arc welding method</b>	<p>Manual metal arc welding methods are to include:</p> <ul style="list-style-type: none"> <li>equipment selection and preparation, material selection/ confirmation and preparation, the application of welding techniques and the</li> </ul>

<b>RANGE STATEMENT</b>	
	operator maintenance of equipment
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of</li> </ul>

<b>RANGE STATEMENT</b>	
	practice
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling, welding equipment, including manual metal arc welding machines, safety equipment, measuring equipment, marking out equipment and lifting equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• rods/electrodes and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to manual metal arc welding</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Welding, Grinding, Machining and Soldering
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## AURVTW2002 Carry out brazing procedures

### Modification History

Release	Comment
Release 1	Replaces AURV281208A Carry out brazing procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	This unit of competency covers the skills and knowledge required to carry out brazing procedures.  Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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### Application of the Unit

<b>Application of the unit</b>	The unit includes identification and confirmation of work requirement, preparation for work and the completion of brazing procedures and work finalisation processes, including clean-up and documentation.  Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine job requirements, including job sheets, quality and quantity of materials.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</li><li>1.4. Materials for repairs and replacements are selected and inspected for quality.</li><li>1.5. Hand, power tooling and safety equipment are identified and checked for safe use.</li><li>1.6. Products are determined to minimise waste material.</li><li>1.7. Procedures are identified for maximising energy efficiency.</li></ul>
2. Complete brazing procedures	<ul style="list-style-type: none"><li>2.1. Information is accessed from sources to enable brazing to be performed in accordance with vehicle and equipment manufacturer/component supplier procedures.</li><li>2.2. Brazing procedures are completed without causing damage to component or system.</li><li>2.3. Brazing is carried out according to a standard that meets industry regulations/guidelines, WHS requirements, legislation and enterprise policy/procedures.</li></ul>
3. Clean up work area and Maintain equipment	<ul style="list-style-type: none"><li>3.1. Material that can be reused is collected and stored.</li><li>3.2. Waste and scrap is removed following workplace procedures.</li><li>3.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</li><li>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</li><li>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</li><li>3.6. Tooling is maintained in accordance with workplace procedures.</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- collect, organise and understand information related to brazing work orders, plans and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to brazing systems, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- brazing materials, processes and techniques
- types of flux, rods and their application
- equipment maintenance procedures
- workplace guidelines regarding acceptable tolerance levels to be considered as per job sheet and manufacturer/component supplier specification
- procedures for reporting faults and material defects
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, setting up, operating and maintaining heating equipment (oxy propane), rods, flux and measuring equipment
- completing a range of brazing tasks to specification.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to brazing procedures
  - equipment, hand and power tooling appropriate to brazing systems
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the Automotive Industry Retail Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Brazing equipment</b>	<p>Brazing equipment is to include:</p> <ul style="list-style-type: none"> <li>heating appliances</li> </ul>
<b>Brazing methods</b>	<p>Brazing methods are to include:</p> <ul style="list-style-type: none"> <li>equipment selection and preparation, material selection/confirmation and preparation, the application of brazing techniques and the operator maintenance of equipment</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first</li> </ul>

<b>RANGE STATEMENT</b>	
	aid requirements and worksite evacuation
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>hand tooling, oxy acetylene/propane torch, brazing equipment, measuring equipment and marking out equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>solvents and fluxes, filler rods, brazing and silver solder rods, and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>safe work procedures related to brazing procedures</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• engineer's design specifications and instructions</li><li>• organisation work specifications and requirements</li><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Welding, Grinding, Machining and Soldering
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## AURVTW2003 Carry out gas metal arc welding procedures

### Modification History

Release	Comment
Release 1	<p>Replaces AURV281308A Carry out gas metal arc (MIG) welding procedures</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to carry out gas metal arc (MIG) welding procedures appropriate to the repairs conducted in the retail, service and repair streams.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Work requires individuals to demonstrate some discretion, judgement and problem solving skills in lifting, safety equipment, MIG welding procedures, environmental issues, repair procedures and vehicle operational requirements.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements including job sheets, quality and quantity of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials for repairs and replacements are selected and inspected for quality.</p> <p>1.5. Correct hand, power tools and safety equipment for safe use.</p> <p>1.6. Products are determined to minimise waste materials.</p> <p>1.7. Procedures are identified for maximising energy efficiency whilst completing the job.</p>
2. Carry out gas metal arc (MIG) welding procedures	<p>2.1. Gas metal arc (MIG) welding procedures are completed without causing damage to any component or system.</p> <p>2.2. Information is accessed from appropriate sources to enable welding to be performed in accordance with vehicle and equipment manufacturer procedures.</p> <p>2.3. MIG welding is carried out according to a standard that meets industry regulations/guidelines, WHS legislation, statutory legislation and enterprise policy/procedures.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedures.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer's specifications and site procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for the identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to welding systems, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements
- equipment safety requirements
- personal safety requirements (e.g. toxic fumes/lead poisoning)
- types of materials to be welded
- types of MIG welding wire and their application
- types of gases and their application
- MIG welding processes, techniques and faults

**REQUIRED SKILLS AND KNOWLEDGE**

- equipment set up and maintenance procedures
- workplace safety policies and procedures
- workplace guidelines regarding acceptable tolerance levels to be considered as per job sheet and manufacturer specification
- procedures for reporting faults and material defects

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Interpret work order and locate and apply relevant information.
- Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment.
- Read and interpret communication procedural information from job sheets to prepare for work.
- Identify materials used in the work process.
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage and wastage of goods, equipment and products
  - maintain required production output and product quality
- Identify, set up, operate and maintain MIG welding, lifting and measuring equipment.

##### Context of, and specific resources for assessment

- Assessment may occur on the job or in a workplace simulated facility with relevant process equipment, materials, work instructions and deadlines.
- Access to vehicle and manufacturer specifications as identified in the Range Statement and standard operating procedures.

##### Method of assessment

- Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts.
- Assessment should be by direct observation of tasks and questioning on underpinning knowledge.
- Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>MIG welding</b>	MIG equipment to include <ul style="list-style-type: none"> <li>• MIG welders</li> </ul>
<b>Materials</b>	Materials include: <ul style="list-style-type: none"> <li>• MIG welding wire and gas</li> </ul>
<b>Methods</b>	Methods include: <ul style="list-style-type: none"> <li>• MIG welding methods and preparation.</li> </ul> Methods should be applied under normal operating conditions
<b>Work practices</b>	Work practices must abide by: <ul style="list-style-type: none"> <li>• workplace health and safety requirements include OHS legislation, material safety management systems, hazardous substances and dangerous goods code, local safe operating procedures and Australian Design Rules regulations</li> <li>• work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling and lifting equipment procedures and organisation insurance requirements</li> </ul>
<b>Resources</b>	Resources may include: <ul style="list-style-type: none"> <li>• hand tools, MIG welding machines and safety equipment</li> <li>• measuring equipment, marking out equipment and lifting equipment</li> <li>• MIG welding wire and appropriate gases</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices

**RANGE STATEMENT****Information/documents**

Sources of information/documentation may include:

- workplace procedures relating to the use of tools and equipment
- work instructions, including:
  - job sheets
  - vehicle manufacturer specifications
  - enterprise operating procedures
  - component manufacture specifications
  - customer requirements
  - industry/workplace codes of practice
  - statutory legislation for vehicle road worthiness, including Australian Design Rules
  - material safety data sheets
  - workplace procedures relating to reporting and communication
  - manufacturer specifications and operational procedures

**Unit Sector(s)****Unit sector**

Vehicle body

**Co-requisite units**

Not applicable.

**Competency field****Competency field**

Technical - Welding, Grinding, Machining and Soldering

## AURVTW2004 Carry out gas tungsten arc welding procedures

### Modification History

Release	Comment
Release 1	<p>Replaces AURV281408A Carry out gas tungsten arc (TIG) welding procedures</p> <p>Unit code updated to meet policy requirements</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency covers the skills and knowledge required to carry out gas tungsten arc (TIG) welding procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work and the completion of welding and work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including job sheets, quality and quantity of materials. 1.2. Job specifications are read and interpreted. 1.3. WHS requirements, including personal protection needs, are observed throughout the work. 1.4. Materials for repairs and replacements are selected and inspected for quality. 1.5. Hand, power tooling and safety equipment are identified and checked for safe use. 1.6. Products are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Carry out gas tungsten arc (TIG) welding procedures	2.1. Information is accessed from sources to enable welding to be performed in accordance with vehicle and equipment manufacturer/component supplier procedures. 2.2. Gas tungsten arc (TIG) welding procedures are completed without causing damage to component or system. 2.3. TIG welding is carried out according to a standard that meets industry regulations/guidelines, WHS requirements, legislation and enterprise policy/procedures.
3. Clean up work area and maintain equipment	3.1. Material that can be reused is collected and stored. 3.2. Waste and scrap is removed following workplace procedures. 3.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures. 3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures. 3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures. 3.6. Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for the identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to welding systems, including the use of measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types of metals
- types of fluxes, rods and their application
- TIG welding processes and techniques
- equipment maintenance procedures
- workplace guidelines regarding acceptable tolerance levels to be considered as per job sheet and manufacturer/component supplier specifications

**REQUIRED SKILLS AND KNOWLEDGE**

- procedures for reporting faults and material defects
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- setting up, operating and maintaining TIG welding, safety, lifting and measuring equipment
- completing a range of gas tungsten arc (TIG) welding tasks to specifications.

#### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to gas tungsten arc (TIG) welding
  - equipment, hand and power tooling appropriate to gas tungsten arc (TIG) welding
  - activities covering mandatory task requirements
  - specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Welding methods</b>	<p>TIG welding methods are to include:</p> <ul style="list-style-type: none"> <li>equipment selection and preparation, material selection/confirmation and preparation, the application of TIG welding techniques and the operator maintenance of equipment</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements are to include, but</p>

<b>RANGE STATEMENT</b>	
	<p>are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>hand tooling, TIG welding machines, rods, safety equipment, measuring equipment, marking out equipment and lifting equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>argon gas, filling rods and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>safe work procedures related to gas tungsten arc (TIG) welding</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian standards</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Welding, Grinding, Machining and Soldering
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## AURVTW2005 Carry out spot welding procedures

### Modification History

Release	Comment
Release 1	Replaces AURV281508A Carry out spot welding procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to carry out spot welding procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work and the completion of spot welding and work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including job sheets, quality and quantity of materials. 1.2. Job specifications are read and interpreted. 1.3. WHS requirements, including personal protection needs, are observed throughout the work. 1.4. Materials for repairs and replacements are selected and inspected for quality. 1.5. Hand, power tooling and safety equipment is identified and checked for safe use. 1.6. Products are determined to minimise waste material. 1.7. Procedures are identified for maximising energy efficiency while completing the job.
2. Carry out spot welding procedures	2.1. Information is accessed from sources to enable welding to be performed in accordance with vehicle and equipment manufacturer/component supplier procedures. 2.2. Spot welding procedures are completed without causing damage to component or system. 2.3. Spot welding is carried out according to a standard that meets industry regulations/guidelines, WHS requirements, legislation and enterprise policy/procedures.
3. Clean up work area and maintain equipment	3.1. Material that can be reused is collected and stored. 3.2. Waste and scrap is removed following workplace procedures. 3.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures. 3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures. 3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures. 3.6. Tooling is maintained in accordance with workplace procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for the identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to spot welding, including the use of welding and measuring equipment and communication devices and the reporting/documenting of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- types of metals
- spot welding equipment types and applications
- spot welding processes and techniques
- equipment maintenance procedures
- workplace guidelines regarding acceptable tolerance levels to be considered as per job sheet and manufacturer/component supplier specifications

**REQUIRED SKILLS AND KNOWLEDGE**

- procedures for reporting faults and material defects
- work organisation and planning processes
- enterprise quality processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identifying, setting up, operating and maintaining spot welding, lifting and measuring equipment
- completing a range of spot welding tasks to specifications.

##### Context of, and specific resources for assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements, including Australian standards.
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to spot welding
  - equipment, hand and power tooling appropriate to spot welding
  - activities covering mandatory task requirements
  - specifications and work instructions.

##### Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of AUR12 Automotive Industry Retail, Service and Repair Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project-related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Spot welding methods</b>	Spot welding methods are to include: <ul style="list-style-type: none"> <li>equipment election and preparation, material selection/confirmation and preparation, the application of spot welding techniques and the operator maintenance of equipment</li> </ul>
<b>WHS requirements</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include: <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous material and substances</li> </ul>
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include, but

<b>RANGE STATEMENT</b>	
	<p>are not limited to:</p> <ul style="list-style-type: none"> <li>waste management, noise, dust and clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>regulations, including Australian standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	<p>Statutory/regulatory authorities may include:</p> <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>hand tooling, spot welding equipment, measuring equipment, marking out equipment and lifting equipment</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>steel products and cleaning materials</li> </ul>
<b>Communications</b>	<p>Communications are to include, but are not limited to:</p> <ul style="list-style-type: none"> <li>verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>safe work procedures related to spot welding</li> <li>regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>engineer's design specifications and instructions</li> <li>organisation work specifications and requirements</li> <li>instructions issued by authorised enterprise or</li> </ul>

**RANGE STATEMENT**

	external persons
	• Australian standards

**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Welding, Grinding, Machining and Soldering
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## AURVTW2007 Conduct oxy-acetylene, thermal heating and cutting

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to set up an oxy-acetylene plant; follow safety requirements, including adjusting gauges to recommended working pressures and identifying flames; and conduct thermal heating and thermal cutting operations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>Work applies to body repairers or dismantlers in the auto body repair and related vehicle industry environment. Skills and knowledge are to be used within the scope of the job role.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine job requirements	<p>1.1.Job specifications and requirements are interpreted and determined from job sheets and work instructions</p> <p>1.2.Appropriate workplace health and safety (WHS) practices are identified and adhered to according to <b>WHS, legislative and workplace requirements</b></p> <p>1.3.<b>Information</b> is accessed from appropriate sources to enable oxy-acetylene safety, set-up, <b>flame</b> adjustment, thermal heating and thermal cutting operations</p> <p>1.4.Approved methods and equipment are accessed and used</p>
2. Plan and prepare work	<p>2.1.Required <b>resources</b> are identified, obtained and inspected for safety and compliance with job specifications</p> <p>2.2.Relevant plans, drawings and texts are selected and interpreted according to work plan and job sheet instructions</p> <p>2.3.Correct working pressures and flame adjustment are applied and inspected for compliance with job specifications</p> <p>2.4.Work is sequenced, prioritised and considered according to specification requirements</p> <p>2.5.Work areas are prepared according to workplace requirements and procedures</p> <p>2.6.Potential hazards are identified and prevention control measures selected according to work plan and workplace procedures</p>
3. Conduct work	<p>3.1.Oxy-acetylene set-up and flame adjustment operations are carried out according to industry standards</p> <p>3.2.Thermal heating is carried out according to industry and workplace standards and job requirements</p> <p>3.3.Thermal cutting operations are carried out according to industry and workplace standards</p>
4. Finalise work processes	<p>4.1.Work area is cleaned and tidied according to workplace procedures</p> <p>4.2.Waste and scrap materials are removed following workplace and environmental requirements and procedures</p> <p>4.3.Tools and equipment are checked and faulty items are identified and tagged</p> <p>4.4.Equipment maintenance activities are completed according to workplace and manufacturer specifications</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to follow workplace verbal instructions
- initiative and enterprise skills to recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, seek assistance and expert knowledge to develop skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents
- numeracy skills to interpret oxy-acetylene pressure gauge and measuring equipment
- planning and organising skills to:
  - plan set-up, adjustment, cutting and heating requirements and follow job specification
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise them
- problem-solving skills to:
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - recognise own limitations and seek advice
  - follow workplace policies and documentation, such as industry code of practice and procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to oxy-acetylene plant, thermal heating and thermal cutting of vehicle sectional repairs, including:
  - specialist tools and equipment

#### Required knowledge

- WHS and environmental regulations and workplace policies and procedures needed to carry out work in a manner that ensures the safety of people and equipment
- safety procedures, specifications and schedules relating to work
- workplace quality system documentation covering instructions, procedures, performance indicators and review processes or equivalent
- environmental protection requirements relating to the disposal of waste material

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- established communication channels and protocols
- problem-identification and resolution techniques
- equipment safety requirements
- personal protective equipment requirements
- procedures for operating oxy-acetylene working pressure gauges for thermal cutting and thermal heating operations
- different oxy-acetylene flames and their application
- procedures for using oxy-acetylene thermal heating and thermal cutting equipment and associated safety requirements

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- comply with relevant regulations, standards, codes of practice, established safe practices, and workplace policies and procedures
- maintain working knowledge of current work systems and practices
- apply, within scope of own role, the requirements of the job or work role:
  - achieve oxy-acetylene set-up, cutting and heating goals
  - achieve workplace quality goals
  - effectively apply problem-solving techniques
- conduct oxy-acetylene safety, set-up and flame adjustment processes
- conduct thermal cutting processes
- conduct thermal heating processes
- use relevant tools and equipment.

##### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

of this unit:

- a safe work environment
- oxy-acetylene plant
- thermal heating and cutting equipment
- hand tools
- safety equipment
- equipment operating instructions
- equipment safety instructions.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Workplace health and safety requirements:</i></b>	<ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice and policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• use of personal protective equipment and clothing</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control and elimination</li> <li>• systems covering the use of hazardous materials and substances</li> <li>• manual-handling procedures, including for lifting and carrying.</li> </ul> </li> </ul>
<b><i>Legislative requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• environmental protection and regulations</li> <li>• duty of care</li> <li>• industry codes of practice.</li> </ul>
<b><i>Workplace requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• environmental management: waste disposal, recycling and re-use guidelines</li> <li>• emergency and evacuation procedures</li> <li>• equipment use procedures</li> <li>• legal obligations</li> <li>• maintenance and storage procedures</li> <li>• WHS requirements</li> <li>• workplace guidelines</li> <li>• policies and procedures relating to own role and responsibility</li> <li>• technical manuals</li> <li>• quality and continuous improvement processes</li> <li>• recording and reporting guidelines.</li> </ul>
<b><i>Information</i></b> may include:	<ul style="list-style-type: none"> <li>• equipment manufacturer specifications</li> <li>• workplace operating procedures</li> <li>• customer requirements</li> <li>• industry codes of practice</li> <li>• material safety data sheets (MSDS).</li> </ul>
<b><i>Flames</i></b> may include:	<ul style="list-style-type: none"> <li>• natural</li> <li>• carburising</li> </ul>

**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"><li>• oxidising.</li></ul>
<b><i>Resources</i></b> may include:	<ul style="list-style-type: none"><li>• hand tools</li><li>• oxy-acetylene thermal heating equipment</li><li>• oxy-acetylene thermal cutting equipment</li><li>• job sheets, drawings and work instructions</li><li>• workplace or simulated workplace.</li></ul>

**Unit Sector(s)**

<b>Competency field</b>	Vehicle Body
<b>Unit sector</b>	Technical – Welding, Grinding, Machining and Soldering

**Custom Content Section**

Not applicable.

## AURVTW2008 Carry out oxy acetylene welding, thermal cutting and thermal heating procedures

### Modification History

Release	Comment
Release 1	<p>Replaces AURV223608A Carry out oxy acetylene welding, thermal cutting and thermal heating procedures</p> <p>Unit code updated to meet policy requirements</p> <p>Reference to OHS legislation replaced with new WHS legislation</p> <p>Licensing statement added to unit descriptor</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency covers the skills and knowledge required to carry out welding, thermal cutting and thermal heating procedures appropriate to the repairs conducted in the retail, service and repair streams.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling and lifting equipment procedures and organisation insurance requirements.</p> <p>Work requires individuals to demonstrate some discretion, judgement and problem solving skills in lifting, safety equipment, oxy welding and thermal cutting and heating procedures, environmental issues, repair procedures and vehicle operational requirements.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<p>1.1. Work instructions are used to determine job requirements, including job sheets, quality and quantity of materials.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace health and safety requirements, including personal protection needs, are observed throughout the work.</p> <p>1.4. Materials for repairs and replacements are selected and inspected for quality.</p> <p>1.5. Correct hand, power tools and safety equipment are selected for safe use.</p> <p>1.6. Products are determined to minimise waste materials.</p> <p>1.7. Procedures are identified for maximising energy efficiency whilst completing the job.</p>
2. Carry out oxy acetylene welding procedures	<p>2.1. Welding procedures are completed without causing damage to any component or system.</p> <p>2.2. Information is accessed from appropriate sources to enable welding to be performed in accordance with vehicle and equipment manufacturer procedures.</p> <p>2.3. Welding is carried out according to a standard that meets industry regulations/guidelines, workplace health and safety (WHS) legislation, statutory legislation and enterprise policy/procedures.</p>
3. Clean up work area and maintain equipment	<p>3.1. Material that can be reused is collected and stored.</p> <p>3.2. Waste and scrap is removed following workplace procedures.</p> <p>3.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>3.5. Operator maintenance is completed in accordance with manufacturer's specifications and site procedures.</p> <p>3.6. Tooling is maintained in accordance with workplace procedures.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- reading and interpreting job specifications
- following work procedures
- handling tools and equipment safely
- accessing relevant information

#### Required knowledge

Required knowledge includes:

- WHS regulations/requirements
- equipment safety requirements
- personal safety requirements (e.g. toxic fumes/lead poisoning)
- types of metals relevant to application
- welding procedures (oxy)
- thermal cutting procedures
- thermal heating procedures
- types of flux, rod and their applications
- equipment maintenance procedures
- planing of oxy welding, thermal cutting and heating
- workplace safety policies and procedures
- workplace guidelines regarding acceptable tolerance levels to be considered as per job sheet and manufacturer specification
- procedures for reporting faults and material defects

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> <li>• interpret work order and locate and apply relevant information</li> <li>• apply safe handling requirements for equipment, products and materials, including use of personal protective equipment</li> <li>• read and interpret communication procedural information from job sheets to prepare for work</li> <li>• identify materials used in the work process</li> <li>• follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> <li>• minimise the risk of injury to self or others</li> <li>• prevent damage and wastage of goods, equipment and products</li> <li>• maintain required production output and product quality</li> <li>• identify, set up, operate and maintain oxy welding, heating and cutting equipment.</li> </ul> </li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• Assessment may occur on the job or in a workplace simulated facility with relevant process equipment, materials, work instructions and deadlines.</li> <li>• Access to vehicle and manufacturer specifications as identified in the Range Statement, and standard operating procedures.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts.</li> <li>• Assessment should be by direct observation of tasks and questioning on underpinning knowledge.</li> <li>• Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which</li> </ul>

## EVIDENCE GUIDE

	together form part of the holistic work role.
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Methods

Methods include:

- cutting metal
- welding metal
- heating metal
- measuring.

Methods should be applied under normal operating conditions.

#### Work practices

Work practices must abide by workplace health and safety requirements, and include:

- WHS legislation
- material safety management systems
- hazardous substances and dangerous goods code
- local safe operating procedures
- Australian Design Rules regulations

#### Resources

Resources may include:

- hand tools, welding equipment, thermal cutting equipment and thermal heating equipment
- measuring equipment, marking out equipment and lifting equipment
- oxy acetylene gas, welding rods, steel, tubing, aluminium, cast iron and marking chalk

RANGE STATEMENT	
Personal protective equipment	Personal protective equipment prescribed under legislation, regulations and enterprise policies and practices
Information/documents	Sources of information/documents may include: <ul style="list-style-type: none"><li>• workplace procedures relating to the use of tools and equipment</li><li>• work instructions, including:<ul style="list-style-type: none"><li>• job sheets</li><li>• vehicle manufacturer specifications</li><li>• enterprise operating procedures</li><li>• component manufacture specifications</li><li>• customer requirements</li><li>• industry/workplace codes of practice</li><li>• statutory legislation for vehicle road worthiness, including Australian Design Rules</li><li>• material safety data sheets</li><li>• workplace procedures relating to reporting and communication</li><li>• manufacturer specifications and operational procedures</li></ul></li></ul>

## Unit Sector(s)

Unit sector	Vehicle body
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## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Welding, Grinding, Machining and Soldering
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## AURVTW3006 Carry out thermoplastic welding procedures

### Modification History

Release	Comment
Release 1	Replaces AURV323908A Carry out thermoplastic welding procedures Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

Unit descriptor	<p>This unit covers the competence required to carry out thermoplastic welding procedures.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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### Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, completion of thermoplastic welding and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	<ul style="list-style-type: none"><li>1.1. Work instructions are used to determine job requirements, including job sheets and quality and quantity of materials.</li><li>1.2. Job specifications are read and interpreted.</li><li>1.3. WHS requirements, including personal protection needs, are observed throughout the work.</li><li>1.4. Materials for repairs and replacements are selected and inspected for quality.</li><li>1.5. Hand, power tooling and safety equipment for safe use.</li><li>1.6. Products are determined to minimise waste materials.</li><li>1.7. Procedures are identified for maximising energy efficiency while completing the job.</li></ul>
2. Carry out thermoplastic welding procedures	<ul style="list-style-type: none"><li>2.1. Information is accessed from sources to enable welding to be performed in accordance with vehicle and equipment manufacturer/component supplier procedures.</li><li>2.2. Thermoplastic welding procedures are completed without causing damage to any component or system.</li><li>2.3. Thermoplastic welding is carried out according to a standard that meets industry regulations/guidelines, WHS legislation, and enterprise policy/procedures.</li></ul>
3. Clean up work area and maintain equipment	<ul style="list-style-type: none"><li>3.1. Material that can be reused is collected and stored</li><li>3.2. Waste and scrap is removed following workplace procedures.</li><li>3.3. Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</li><li>3.4. Unserviceable equipment is tagged and faults identified in accordance with workplace procedures.</li><li>3.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</li><li>3.6. Tooling is maintained in accordance with workplace procedures.</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to thermoplastic welding, including the use of thermoplastic welding systems, measuring equipment and communication devices and the reporting/ recording of results

#### Required knowledge

A working knowledge of:

- WHS regulations/requirements, equipment, material and personal safety requirements
- thermoplastic welding processes and techniques
- types of plastics and welding procedures
- equipment maintenance procedures
- workplace guidelines regarding acceptable tolerance levels to be considered as per job sheet and manufacturer/component supplier specifications
- procedures for reporting faults and material defects
- work organisation and planning processes
- enterprise quality processes



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- carrying out thermoplastic welding procedures for tasks covering a range of plastics to specification
- completing post-welding housekeeping.

#### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements, including Australian Standards.

The following resources should be made available:

- workplace location or simulated workplace
- materials relevant to thermoplastic welding
- equipment and hand and power tooling appropriate to thermoplastic welding
- activities covering mandatory task requirements
- specifications and work instructions.

#### Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also

**EVIDENCE GUIDE**

	<p>reinforce the integration of key competencies.</p> <ul style="list-style-type: none"><li>• Assessment may be applied under project related conditions and require evidence of process.</li><li>• Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li><li>• It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.</li><li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li></ul>
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## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Thermoplastic welding</b>	<ul style="list-style-type: none"> <li>• Thermoplastic welding equipment.</li> <li>• Materials - variety of plastics.</li> </ul>
<b>Methods</b>	<ul style="list-style-type: none"> <li>• Methods are to include thermoplastic welding preparation and methods covering a variety of plastics.</li> <li>• Particular care and safe working practices must be applied in relation to fumes emanating from plastic materials and bonding agents.</li> </ul>
<b>WHS</b>	<p>WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.</p>
<b>Personal protective equipment</b>	<p>Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices.</p>
<b>Safe operating procedures</b>	<p>Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors.</p>
<b>Emergency procedures</b>	<p>Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation.</p>

<b>RANGE STATEMENT</b>	
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management.
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice.
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, thermoplastic welding equipment, including electric and flame heated irons and gas-fired torches, safety equipment, measuring equipment and marking out equipment.
<b>Materials</b>	Materials may include thermoplastic welding rods/ materials and cleaning materials.
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers.
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to thermoplastic welding</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• instructions issued by authorised enterprise or external persons</li><li>• Australian Standards.</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Vehicle body
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Welding, Grinding, Machining and Soldering
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## AUMABA002 Operate load shifting equipment

### Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMABA3002 Operate load shifting equipment

### Application

This unit describes the performance outcomes required to safely use load shifting equipment. It applies to those in an automotive environment and involves the application of skills and knowledge to select and use suitable load shifting equipment and perform pre-operational inspections to ensure its safe operation.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Manufacturing - Common

### Unit Sector

Support and Logistics

## Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Inspect load shifting equipment	<p>1.1 <b><i>Inspection of load shifting equipment</i></b> is completed according to <b><i>workplace procedures</i></b></p> <p>1.2 Load weights and volumes are identified, and confirmed by supervisor</p> <p>1.3 Equipment faults are identified, documented and reported to appropriate personnel</p>
2. Lift, shift and place load	<p>2.1 Load characteristics and handling requirements are identified and appropriate shifting device is selected</p> <p>2.2 Shifting route is planned and identified hazards are controlled</p> <p>2.3 Load is placed in specified locations without causing damage to property, machinery or equipment</p> <p>2.4 Lift, shift and placement of load are completed using approved work health and safety (WHS) methods and equipment, according to workplace procedures</p>
3. Complete load shifting operations	<p>3.1 Post-inspection of load shifting equipment is completed</p> <p>3.2 Identified faults are tagged and reported</p> <p>3.3 Load shifting equipment is stored and secured</p> <p>3.4 Load shifting documentation and maintenance records are completed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>interpret load shifting equipment operating procedures and safety requirements</li><li>review load shifting equipment pre- and post-inspection schedules.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly complete inspection schedules, maintenance reports and workplace documents.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>convey identified equipment faults to appropriate personnel</li><li>speak clearly and directly to inform others of loading and shifting requirements</li><li>communicate equipment operating instructions and load weights and volumes to co-workers.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>identify and where necessary estimate weights and volumes of objects to be shifted</li><li>identify numbers in metric and imperial units and measurements.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>identify and prepare load shifting equipment and work area</li><li>identify overhead and ground level workplace hazards</li><li>conduct pre- and post-use inspection of equipment</li><li>complete workplace documentation.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify load shifting equipment appropriate for the job</li><li>identify load shifting equipment faults and defects.</li></ul>
Teamwork skills to:	<ul style="list-style-type: none"><li>advise co-workers of load shifting activities.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Inspection</i></b> must include:	<ul style="list-style-type: none"><li>• hydraulic and pneumatic leaks</li><li>• lifting block</li><li>• operation of control system</li><li>• vehicle hazard warning light</li><li>• wheels and tyres</li><li>• wire rope, chains and lifting attachments.</li></ul>
<b><i>Load shifting equipment</i></b> must include:	<ul style="list-style-type: none"><li>• overhead travelling crane</li><li>• pallet truck</li><li>• trolley jack.</li></ul>
<b><i>Workplace procedures</i></b> must include:	<ul style="list-style-type: none"><li>• equipment operating instructions</li><li>• identifying load weights and volumes</li><li>• pre- and post-use inspection of equipment</li><li>• recording and reporting</li><li>• load storage location</li><li>• WHS requirements.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

# Assessment Requirements for AUMABA002 Operate load shifting equipment

## Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMABA3002 Operate load shifting equipment

## Performance Evidence

Before competency can be determined, individuals must have competently operated load shifting equipment on a minimum of two occasions.

Individuals must demonstrate they can:

- conduct pre- and post-operational checks to load shifting equipment
- comply with workplace procedures and relevant load shifting regulations, standards and codes of practice
- document and report load shifting equipment faults
- demonstrate safe operating techniques for lifting, shifting and placing loads in line with work health and safety (WHS) and workplace requirements
- select and use load shifting equipment appropriate to weight and volume of load
- complete load shifting equipment records.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- WHS requirements when operating load shifting equipment, including overhead and ground level workplace hazards
- types, application and operation of load shifting equipment, including:
  - overhead travelling crane
  - pallet truck
  - trolley jack
- inspection procedures for load shifting equipment
- methods of determining load specifications, including weight, size and type
- methods of determining appropriate load shifting equipment for the circumstance
- load shifting equipment maintenance reports and schedules
- load shifting equipment storage procedures.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements and hold relevant load shifting equipment licences.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the operation of load-shifting equipment, e.g. load shifting equipment log books.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- load shifting devices and equipment
- workplace documentation relating to load shifting, including load shifting equipment inspection documentation
- load shifting equipment operating instructions and procedures
- relevant to an automotive manufacturing environment.

## Links

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

Assessment Strategies Guides -

<http://www.asacompanionvolumes.com.au/aum-assessment-guide>

## **AUMAMM001 Influence and lead work groups in an automotive manufacturing workplace**

### **Modification History**

<b>Release</b>	<b>Comment</b>
<b>Release 1</b>	Unit updated to reflect the new standards for Training Packages Replaces AUMAMM3001 Influence and lead work groups in an automotive manufacturing environment

### **Application**

This unit describes the performance outcomes required to influence and lead work groups and resolve problems in an automotive manufacturing environment.

It involves the application of skills and knowledge at a specialist level.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### **Competency Field**

Manufacturing - Common

### **Unit Sector**

Management, Leadership and Supervision - Manufacture

## Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan and determine work group task	<p>1.1 <b><i>Work instructions</i></b> and work health and safety (WHS) requirements are identified</p> <p>1.2 Current work processes are monitored for efficiency and effectiveness</p> <p>1.3 Process methods necessary to complete a group task are planned</p> <p>1.4 Responsibility for planning and completing components of the group task is assigned on an individual or shared basis</p>
2. Participate in work group task	<p>2.1 Communication methods appropriate to the group task are applied</p> <p>2.2 Responsibility for quality and project timelines and proposed productivity outcomes are agreed</p> <p>2.3 Assistance in completing the group task is sought from appropriate personnel as required</p> <p>2.4 Problems are discussed and resolved according to workplace procedures</p>
3. Monitor progress of work group task	<p>3.1 Contribution of individual group members to work task progress is monitored</p> <p>3.2 Feedback is provided to the work group on effectiveness of the group task</p> <p>3.3 Ways of improving performance are proposed and agreed on</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>interpret team key production indicators and production goals</li><li>interpret production requirements and meeting agendas</li><li>interpret work instructions.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly enter information into manufacturing control documents</li><li>complete production control sheets and graphs</li><li>legibly complete safety, accident and incident reporting documents.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>actively participate in team decision making and team meetings</li><li>communicate and contribute to the structure of team tasks.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read, interpret and prepare control sheets and charts</li><li>interpret team key production indicators and production goals.</li></ul>
Planning and Organising skills to:	<ul style="list-style-type: none"><li>adapting to changing work conditions</li><li>manage time when planning, preparing and organising work priorities.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Work instructions</i></b> must include:	<ul style="list-style-type: none"><li>machine set-up procedures</li><li>operator instruction sheets (OIS) or workplace equivalent</li><li>preventative maintenance checklists</li><li>process control plans (PCPs) or workplace equivalent</li><li>standard operating procedures (SOPs) or workplace equivalent.</li></ul>
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## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

## Assessment Requirements for AUMAMM001 Influence and lead work groups in an automotive manufacturing workplace

### Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMAMM3001 Influence and lead work groups in an automotive manufacturing environment

### Performance Evidence

Before competency can be determined, individuals must have competently participated in influencing and leading work groups on a minimum of three occasions.

Individuals must demonstrate they can:

- give and receive instructions relating to group task
- work and communicate effectively with others in an automotive manufacturing environment
- influence and lead work groups within scope of own authority to:
  - achieve production goals
  - achieve work quality goals
  - identify problems and apply problem-resolution techniques
- follow work instructions, workplace diversity, equal opportunity and conflict-resolution procedures
- respond constructively to changing work requirements
- show initiative in adapting to changing work conditions or contexts
- manage time when planning, preparing and organising work priorities.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- established workplace communication techniques, channels and protocols
- work health and safety (WHS) requirements relating to influencing and leading automotive manufacturing work groups
- workplace diversity, equal opportunity and conflict-resolution procedures when influencing and leading work groups
- quality systems and performance measures
- recording, reporting and maintenance procedures relating to influencing and leading automotive work groups.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to activities related to leading work groups in an automotive manufacturing environment.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- work instructions
- workplace conflict-resolution, diversity and equal opportunity procedures that inform work involving influencing and leading automotive manufacturing work groups.

## Links

Assessment Strategies Guides -

<http://www.asacompanionvolumes.com.au/aum-assessment-guide>

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

## AUMGTG001 Install fixed and moveable glass components on vehicles

### Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTG3001 Install fixed and moveable glass components

### Application

This unit describes the performance outcomes required to cut, prepare and install fixed and moveable glass components on vehicles.

It applies to those in an automotive service and repair environment and involves the application of skills and knowledge at a production worker level.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

### Competency Field

Manufacturing - Bus, Truck and Trailer

### Unit Sector

Technical - Glazing

## Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Fabricate templates for glass components	1.1 Job specifications are identified from work orders and work instructions 1.2 <b><i>Workplace procedures</i></b> are identified 1.3 Templates are fabricated from selected materials to meet job specifications
2. Mark and cut glass openings	2.1 Templates are used to mark and cut glass opening using workplace methods and equipment 2.2 Vehicle panels and trims are prepared for installing glass components
3. Install glass components	3.1 Adhesives or glass retaining system are identified and selected according to work order and job specification 3.2 Glass components are installed according to vehicle manufacturer specifications 3.3 Installed glass components are checked against specifications and leak tested, and corrective action is taken as required
4. Complete work processes	4.1 Work area is cleaned, and materials disposed of or recycled according to workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored according to workplace procedures 4.3 Workplace documentation is completed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>interpret job specifications and work instructions</li><li>identify work health and safety (WHS) requirements from workplace procedures</li><li>interpret operating procedures of tools and equipment</li><li>identify work orders.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>complete job sheets relating to installation.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>identify, mark out and measure glass components and templates according to specifications</li><li>use measuring equipment.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Workplace procedures</i></b> must include:	<ul style="list-style-type: none"><li>recording and reporting guidelines for installing glass components in vehicles</li><li>use of equipment for installing glass components in vehicles</li><li>WHS requirements related to installing glass components in vehicles, including:<ul style="list-style-type: none"><li>vehicle protection measures</li><li>personal protective equipment, including safety glasses, gloves and coveralls</li></ul></li><li>workplace quality guidelines for installing glass components in vehicles.</li></ul>
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## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

## Assessment Requirements for AUMGTG001 Install fixed and moveable glass components on vehicles

### Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTG3001 Install fixed and moveable glass components

### Performance Evidence

Before competency can be determined, individuals must have competently installed glass components on vehicles on a minimum of two occasions.

Individuals must demonstrate they can:

- interpret job information
- mark out and fabricate templates for glass components
- select appropriate glass sealants, adhesives, tools and equipment
- prepare, install and adjust fixed and moveable glass components according to workplace procedures and work health and safety (WHS) requirements
- leak test installed glass components
- complete job sheets relating to installation.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace procedures and WHS requirements relating to installing fixed and moveable glass components on vehicles
- work documentation covering procedures, specifications, schedules and work plans
- template measuring and marking out procedures
- cutting procedures for vehicle panels and trim
- installation procedures for fixed, bonded and moveable glass components
- urethane, rubber and butyl installation methods
- bonded glass installation methods.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles on which they have worked, e.g. work sheets.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- tools and equipment required for installing glass components
- automotive vehicle or simulated frame for glass installation
- materials to produce templates for glass components
- fixed and movable glass components
- work orders and job specifications
- WHS requirements for installing glass components on vehicles, including:
  - vehicle protection equipment
  - personal protective equipment, including safety glasses, gloves and coveralls
- workplace procedures to install fixed and moveable glass components on vehicles
- workplace documentation relating to installing glass components on vehicles, including:
  - customer details
  - glass warranty information
  - work sheets.

## Links

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aum-assessment-guide>

## AUMGTS004 Fabricate parts for vehicle sub-assemblies

### Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTS3004 Fabricate parts for sub-assemblies

### Application

This unit describes the performance outcomes required to produce, finish and test parts and components for vehicle sub-assemblies.

It applies to those in an automotive manufacturing environment and involves the application of skills and knowledge at a production worker level.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

### Competency Field

Manufacturing - Bus, Truck and Trailer

### Unit Sector

Technical - Fabrication

## Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan and prepare	1.1 Work orders, job specifications and drawings are identified and confirmed 1.2 Tools, equipment and materials are identified, selected and prepared according to work order and job specification 1.3 Materials are inspected for quality, and defects identified and reported 1.4 Welding equipment is selected, inspected, tested and adjusted according to job requirements
2. Weld components	2.1 Components are welded as identified in working drawings according to <b><i>workplace procedures</i></b> 2.2 Welds are completed to workplace <b><i>quality standards</i></b> and weld specifications 2.3 Welded parts are checked against job specifications 2.4 Weld faults are identified and rectified according to workplace procedures
3. Assemble and finish sub-assemblies	3.1 Sub-assemblies are completed and checked against job specification 3.2 Sub-assembly fasteners are tensioned to specifications 3.3 Seals, adhesives and sealants are applied to ensure joints are leak free
4. Complete work processes	4.1 Final inspections are made and faulty sub-assemblies are reworked in line with workplace procedures 4.2 Tools, equipment and work areas are cleaned, maintained, and inspected according to workplace procedures 4.3 Waste material is collected and recycled or disposed of according to workplace procedures 4.4 Faulty equipment is identified, tagged and reported according to workplace procedures 4.5 Work job sheets are completed and reported to supervisor

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>interpret workplace procedures, work health and safety (WHS) requirements, work orders, job specifications and drawings</li><li>interpret equipment operating procedures and work instructions.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>identify part numbers and quantities</li><li>interpret job specification measurements</li><li>set welding equipment</li><li>use measuring equipment.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>complete faulty equipment tags</li><li>legibly complete production documents.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>inform team members of suitable fabrication sequence and methods.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>select and prepare equipment, materials and work area</li><li>fabricate parts for sub-assemblies within required timelines.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>access, interpret and apply work orders and work instructions.</li></ul>
Teamwork skills to:	<ul style="list-style-type: none"><li>work as part of a production team.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Workplace procedures</i></b> must include:	<ul style="list-style-type: none"><li>• procedures for recording and reporting the fabrication of parts for vehicle sub-assemblies</li><li>• use of tools and equipment for fabricating parts for vehicle sub-assemblies</li><li>• WHS requirements for fabricating parts for vehicle sub-assemblies</li><li>• workplace quality standards relevant to fabricating parts for vehicle sub-assemblies.</li></ul>
<b><i>Quality standards</i></b> must include:	<ul style="list-style-type: none"><li>• component fit and finish of fabricated parts for vehicle sub-assemblies</li><li>• weld quality of fabricated parts for vehicle sub-assemblies.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

## Assessment Requirements for AUMGTS004 Fabricate parts for vehicle sub-assemblies

### Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTS3004 Fabricate parts for sub-assemblies

### Performance Evidence

Before competency can be determined, individuals must have competently fabricated parts for sub-assemblies on a minimum of two occasions.

Individuals must demonstrate they can:

- locate, interpret and apply fabrication information and specifications
- use tools, equipment and welding equipment safely
- fabricate parts for sub-assemblies according to workplace procedures and work health and safety (WHS) requirements
- follow work instructions and production schedules when fabricating parts for vehicle sub-assemblies
- use inspection and checking processes and identify faulty parts of vehicle sub-assemblies.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- WHS requirements relevant to fabricating vehicle sub-assemblies
- types of vehicle sub-assemblies and their components
- original equipment manufacturer operating procedures
- component fabrication alignment procedures
- welding types and techniques for fabricating vehicle sub-assemblies
- assembly procedures of vehicle sub-assemblies.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle sub-assemblies that they have fabricated, e.g. production work sheets.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- work instructions for fabricating vehicle sub-assemblies
- vehicle sub-assembly components
- vehicle sub-assembly specifications
- tools, equipment and welding equipment relevant to fabricating vehicle sub-assemblies.

## Links

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aum-assessment-guide>

## AUMGTY002 Install vehicle components

### Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTY3002 Mount and install assembled component to chassis or frame

### Application

This unit describes the performance outcomes required to mount and install assembled components to a chassis or frame (e.g. vehicle cabin, sleeper or vehicle bodies). It applies to those in an automotive and related component manufacturing environment and involves the application of skills and knowledge at a specialist level. No licensing, legislative or certification requirements apply to this unit at the time of publication.

### Competency Field

Manufacturing - Bus, Truck and Trailer

### Unit Sector

Technical - Chassis and Frame

## Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan and prepare	1.1 Hand <b><i>tools and equipment</i></b> are selected and inspected, and faults repaired or reported 1.2 Appropriate lifting equipment is selected and checked for safe operation 1.3 Fasteners are identified from job specifications 1.4 Job <b><i>information</i></b> and working drawings are identified, interpreted and confirmed
2. Position and tension components	2.1 <b><i>Workplace procedures</i></b> are identified and followed 2.2 Components are matched, positioned and secured according to work instruction and component specifications 2.3 Fasteners are tensioned to specification 2.4 Components are inspected for alignment and quality according to work order and workplace quality standards
3. Hook up systems	3.1 Component service lines are hooked up according to drawings and component specifications 3.2 Completed hook-up is checked against job specifications, and then tested and inspected for quality and operation
4. Complete work processes	4.1 Work area and equipment are cleaned, inspected and maintained according to workplace procedures 4.2 Faulty equipment is identified, tagged and reported 4.3 Work sheets and production schedule are completed and given to appropriate personnel

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>• identify workplace procedures and work health and safety (WHS) requirements</li><li>• interpret job instructions, working drawings, original equipment manufacturer (OEM) guides and, if applicable, requirements of Vehicle Standards Bulletin 6 (VSB6) National Code of Practice – Heavy Vehicle Modifications</li><li>• interpret component specifications</li><li>• identify installation sequences</li><li>• identify work sheets and inspection forms.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>• complete production schedules, equipment maintenance forms and faulty equipment tags</li><li>• prepare sequence work plans.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>• identify drawing and component specifications</li><li>• use measuring equipment</li><li>• identify fastener quantities and tension specifications.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>• select and prepare components, equipment and work area.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"><li>• hand and power tools</li><li>• lifting equipment</li><li>• vehicle protection equipment.</li></ul>
<b><i>Information</i></b> must include:	<ul style="list-style-type: none"><li>• component and service line specifications</li><li>• component assembly instructions</li><li>• customer requirements</li><li>• manufacturer specifications and guides</li><li>• VSB6</li><li>• work orders and job specifications</li><li>• workplace procedures and instructions.</li></ul>
<b><i>Workplace procedures</i></b> must include:	<ul style="list-style-type: none"><li>• equipment operations</li><li>• quality standards</li><li>• recording and reporting</li><li>• WHS requirements</li><li>• work instructions.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

## Assessment Requirements for AUMGTY002 Install vehicle components

### Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTY3002 Mount and install assembled component to chassis or frame

### Performance Evidence

Before competency can be determined, individuals must have competently installed vehicle components on a minimum of two occasions.

Individuals must demonstrate they can:

- mount and install assembled components and service lines to a chassis or frame according to workplace procedures and work health and safety (WHS) requirements
- follow job specifications and work instructions when installing vehicle components
- identify materials lists, working drawings and production requirements
- select components for installation
- select and use tools and equipment for installing vehicle components
- complete workplace documentation relating to installing vehicle components
- apply manual-handling techniques relating to installing vehicle components.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace procedures and WHS requirements relating to installing vehicle components, including safe use of vehicle component installation equipment
- quality standards relating to installing vehicle components
- manufacturing procedures and vehicle component specifications
- material-handling techniques for installing vehicle components
- work sheets and production schedule documentation relating to installing vehicle components
- vehicle components
- procedures for operating lifting equipment required to install vehicle components.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles on which they have worked, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- working drawings and component specifications for installation
- original equipment manufacturer (OEM) installation guides
- service line fasteners and assembled components
- tools and equipment required to install vehicle components
- personal protective clothing and equipment relating to work requirements
- Vehicle Standards Bulletin 6 (VSB6) National Code of Practice – Heavy Vehicle Modifications
- workplace procedures for installing vehicle components
- lifting equipment required to install vehicle components.

## Links

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aum-assessment-guide>

Implementation Guide -

<http://www.asacompanionvolumes.com.au/aum-implementation-guide>

## AURFA009 Carry out research into the automotive industry

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to carry out research into the nature and structure of an automotive retail service and repair (RS&R) or automotive manufacturing workplace. It also requires the learner to prepare a research report.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Pre-requisite Unit

Not applicable.

### Competency Field

Common

### Unit Sector

Foundation Skills

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare and plan research	1.1 Automotive industry sectors and types of businesses are identified for research 1.2 Information on the structure and operation of the automotive industry is located 1.3 <b><i>Safety and environmental requirements</i></b> for the automotive business are sourced
2. Investigate nature and structure of automotive business	2.1 Type of business, product line and customer profile are identified 2.2 Basic <b><i>supervision or management structure</i></b> of business is identified 2.3 <b><i>Employment conditions</i></b> of business are identified 2.4 <b><i>Employee clothing requirements</i></b> for business are identified 2.5 Workplace plan is drawn detailing identified <b><i>workplace safety features</i></b> 2.6 <b><i>Environment protection features</i></b> of business are identified 2.7 Findings and details are recorded for research report
3. Prepare research report	3.1 Research findings are reviewed and summarised under broad headings 3.2 Research findings are presented as a document

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate key information quickly and efficiently in appropriate sources.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>interpret information from industry and workplace documents.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>organise findings and prepare a research report.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to obtain information on business structure and operation from business workers.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>• relevant workplace procedures reflecting health and safety requirements</li> <li>• material safety management systems</li> <li>• hazardous substances and dangerous goods codes.</li> </ul>
<b><i>Supervision or management structure</i></b> must include one or more of the following:	<ul style="list-style-type: none"> <li>• employee supervision</li> <li>• line or operational management</li> <li>• team leaders</li> <li>• trainers.</li> </ul>
<b><i>Employment conditions</i></b> must include one or more of the following:	<ul style="list-style-type: none"> <li>• employee attendance times</li> <li>• induction training</li> <li>• shift work and weekend work requirements</li> <li>• type of qualifications.</li> </ul>
<b><i>Employee clothing requirements</i></b> must include:	<ul style="list-style-type: none"> <li>• any requirements in special work areas, such as foundry or paint shop</li> <li>• ear protection</li> <li>• personal protective clothing and footwear</li> <li>• safety glasses</li> <li>• any uniform requirements.</li> </ul>
<b><i>Workplace safety features</i></b> must include:	<ul style="list-style-type: none"> <li>• emergency procedures</li> <li>• fire extinguishers (type and location)</li> <li>• first aid facilities</li> <li>• hazardous warning signs</li> <li>• manual-handling procedures.</li> </ul>
<b><i>Environment protection features</i></b> must include:	<ul style="list-style-type: none"> <li>• emission control</li> <li>• material recycling</li> <li>• waste material disposal.</li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURAF009 Carry out research into the automotive industry

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- produce a research report on an automotive retail service or repair business or a component manufacturing business.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- automotive industry information, including:
  - sectors of the industry
  - types of businesses in each sector, including their products and services
  - distribution channels for industry products and services
  - relationships of the automotive industry with other industries
  - state and commonwealth government agencies responsible for directing safety and environmental requirements for the automotive industry
  - major automotive industry bodies and associations
  - career opportunities and career paths in the automotive industry
- roles, responsibilities and inter-relationships of individual personnel in an industry environment, including:
  - unions and employer bodies
  - professional associations
- industrial relations issues, including:
  - awards and enterprise bargaining agreements
  - non-award areas
  - cultural issues
- employment obligations in day-to-day work activities in the automotive industry
- new technologies in the automotive industry and their effect on the industry
- procedures for recording, reviewing and presenting research findings.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that validates the industry research.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- reference books and technical manuals
- industry journals
- computer and internet access
- job descriptions
- federal and state industrial awards
- specialist technical publications.

## Links

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide>

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## AURETK003 Operate electrical test equipment

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to operate electrical test equipment. It requires the learner to plan and prepare the task, select the correct equipment, test electrical and electronic circuits, and check and store the electrical test equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Electrical

### Unit Sector

Technical - Tools and Equipment

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan to operate electrical test equipment	1.1 <b><i>Safety requirements</i></b> are sourced and interpreted 1.2 Task instruction is interpreted and vehicle electrical circuit to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for operating electrical test equipment are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Electrical test equipment is identified according to task instruction and manufacturer specifications
2. Test electrical circuits	2.1 <b><i>Electrical test equipment</i></b> is checked prior to use according to manufacturer specifications and safety requirements 2.2 Electrical test equipment is used to test vehicle electrical circuits according to manufacturer specifications and safety requirements 2.3 Electrical test equipment readings are checked and compared with manufacturer specifications 2.4 Electrical test equipment readings are recorded
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle or equipment is presented ready for use or storage according to workplace procedures 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 3.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 3.4 Workplace documentation is processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle electrical system information and electrical test equipment operating procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from job instruction, manufacturer specifications, safety requirements and workplace procedures to safely and effectively operate electrical test equipment</li><li>select and interpret key information from environmental requirements and workplace procedures to support environmental sustainability and to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation, using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>use basic mathematical operations, including addition, subtraction, multiplication and division, when using Ohm's law and Watt's law to calculate electrical voltage, current flow, resistance and power</li><li>read and interpret electrical test equipment correctly, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. <math>\Omega</math> for ohms).</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:</li><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of tools</li><li>• identification of electrical hazards</li><li>• application of procedures for operating electrical test equipment.</li></ul>
<b><i>Electrical test equipment</i></b> must include:	<ul style="list-style-type: none"><li>• 12 volt test lights and LED test lights</li><li>• ammeters</li><li>• voltmeters</li><li>• ohmmeters</li><li>• multimeters.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURETK003 Operate electrical test equipment

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly and safely operate electrical test equipment to test electrical circuits on a minimum of two different vehicles.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS) and, occupational health and safety (OHS) requirements when operating electrical test equipment, including:
- procedures for the correct use of personal protective equipment, including safety glasses, ear protection and safety footwear
- procedures for the correct use of tools
- identification of electrical hazards
- procedures for operating electrical test equipment
- meaning of electrical terms, including:
  - voltage
  - amperage
  - watts
  - resistance
- theory of electrical circuits, including:
  - Ohm's law
  - Watt's law
- circuit types, including series and parallel
- electrical component symbols
- types of electrical circuits in vehicles, including electrical components
- types of electrical circuit diagrams
- types, application and operation of electrical test equipment, including:
  - 12 volt test lights and LED test lights
  - ammeters
  - voltmeters
  - multimeters
  - ohmmeters
- procedures for testing electrical circuits on vehicles
- procedures for identifying and rectifying faults
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to operating electrical test equipment, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- electrical test equipment, including:
  - 12 volt test light
  - ammeter
  - voltmeter
  - ohmmeter
  - multimeter
  - LED test light
- two vehicles with operational electrical circuits.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURETR046 Remove and refit vehicle batteries

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and refit lead-acid batteries from a vehicle. It requires the learner to plan and prepare the task; investigate battery types and connections; perform the task; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Electrical

### Unit Sector

Technical - Electrical and Electronic

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and refit battery	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and vehicle battery to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for battery removal and refitting are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 Tools and equipment required for battery removal and refitting are identified according to manufacturer specifications</p>
2. Remove battery	<p>2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 Vehicle is prepared for battery removal according to workplace procedures and safety and environmental requirements</p> <p>2.3 <b><i>Battery</i></b> is removed according to workplace procedures and manufacturer specifications, and without causing damage to components, tools or equipment</p> <p>2.4 Battery is identified and inspected according to manufacturer specifications</p> <p>2.5 Battery inspection results are recorded</p>
3. Refit battery	<p>3.1 Battery is refitted according to workplace procedures, manufacturer specifications and safety requirements, and without causing damage to components, tools or equipment</p> <p>3.2 Vehicle is checked for correct electrical operation</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use or storage according to workplace procedures</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary</p> <p>4.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle battery information and battery removal and refitting procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and refit batteries</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information imbedded in battery identification codes.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to remove and refit batteries.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of hand tools and lifting equipment</li><li>• application of procedures for handling, storing and disposing of automotive batteries.</li></ul></li></ul>
<b><i>Battery</i></b> must include:	<ul style="list-style-type: none"><li>• lead-acid battery.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

# Assessment Requirements for AURETR046 Remove and refit vehicle batteries

## Modification History

Release	Comment
Release 1	New unit of competency

## Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and refit the automotive batteries of a minimum of two different operational vehicles.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements when removing and refitting batteries, including:
  - safety data sheets (SDS) and procedures for handling, storing and disposing of used automotive batteries
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting equipment
- battery types and their application, including:
  - lead-acid batteries, including:
    - deep cycle batteries
    - maintenance-free batteries, including gel batteries and absorbed glass mat batteries
    - lithium-ion batteries
- battery identification procedures
- battery polarity and connection methods
- battery removal and refitting methods, precautions and procedures
- battery cleaning methods
- post-fitting inspection procedures
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and refitted batteries, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two operational vehicles with lead-acid batteries
- hand tools for removing and refitting lead-acid batteries.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURETR047 Recharge vehicle batteries

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to recharge a vehicle's battery. It requires the learner to plan and prepare the task; investigate battery types and connections; inspect, test and charge batteries; and maintain a work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Electrical

### Unit Sector

Technical - Electrical and Electronic

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to recharge battery	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and battery to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for recharging vehicle battery are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 Tools and equipment are identified according to manufacturer specifications</p>
2. Determine battery serviceability	<p>2.1 <b><i>Battery testing equipment</i></b> is checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 <b><i>Battery</i></b> is cleaned and prepared for inspection and testing according to manufacturer specifications and safety and environmental requirements</p> <p>2.3 Battery is inspected and tested according to manufacturer specifications and workplace procedures</p> <p>2.4 Observations of battery condition and serviceability or issues requiring further exploration are recorded</p>
3. Charge battery	<p>3.1 Battery charging equipment is checked prior to use according to manufacturer specifications and safety requirements</p> <p>3.2 Battery is prepared and charged according to manufacturer specifications and procedures</p> <p>3.3 Battery post-charging condition and serviceability are checked according to manufacturer specifications and workplace procedures</p> <p>3.4 Observations of battery condition and serviceability post charging or issues requiring further exploration are recorded</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and battery is presented ready for use or storage according to workplace procedures</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>4.3 Tools and equipment are checked and stored according to</p>

	workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures
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## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"> <li>locate appropriate sources of vehicle battery information and battery charging procedures.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures relating to recharging vehicle batteries</li> <li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li> </ul>
Oral communication skills to:	<ul style="list-style-type: none"> <li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>read and interpret numerical information in battery identification codes and ratings</li> <li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate appropriate charge rates</li> <li>read and interpret electrical test equipment correctly, including voltmeters and hydrometers, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. V for volts).</li> </ul>
Planning and organising skills to:	<ul style="list-style-type: none"> <li>plan own work requirements and prioritise actions to achieve required outcomes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li> </ul>
Problem-solving skills to:	<ul style="list-style-type: none"> <li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>set up and operate equipment and tools required to recharge batteries.</li> </ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of hand tools and battery lifting equipment</li><li>• identifying dangers of working with battery testing and charging equipment</li><li>• applying procedures for handling, storing and disposing of used automotive batteries and battery fluid.</li></ul></li></ul>
<b><i>Battery testing equipment</i></b> must include:	<ul style="list-style-type: none"><li>• hydrometer</li><li>• high-rate discharge tester.</li></ul>
<b><i>Battery</i></b> must include:	<ul style="list-style-type: none"><li>• lead-acid battery.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURETR047 Recharge vehicle batteries

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly recharge at least two automotive batteries with different cold-cranking amp (CCA) ratings.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - dangers of working with battery testing and charging equipment
  - safety data sheets (SDS) and procedures for handling, storing and disposing of automotive batteries and battery fluid
- battery inspection and testing methods, including:
  - visual checks
  - hydrometers
  - high-rate discharge testers
  - resting battery voltage
- battery charging procedures, including:
  - methods for determining appropriate charging rate, including reserve capacity (RC) and CCA methods
  - types, application and operating procedures for automotive battery chargers
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have recharged batteries, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two lead-acid automotive batteries with different CCA ratings
- battery testing equipment, including hydrometer and high-rate discharge tester
- battery charger
- automotive hand tools.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURETR048 Construct and test basic electronic circuits

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to construct and test basic electronic circuits using a small number of standard electronic components. It requires the learner to plan and prepare the task, select the correct equipment, construct and test electronic circuits, and check and store the electrical test equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Electrical

### Unit Sector

Technical - Electrical and Electronic

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to construct basic electronic circuit	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and <b><i>electronic circuit</i></b> to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for electronic circuitry are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p>
2. Draw circuit diagrams and identify equipment and materials to construct electronic circuit	<p>2.1 Electronic circuit diagrams that accurately reflect the circuit specifications are drawn according to manufacturer specifications</p> <p>2.2 Electronic components are depicted correctly in circuit diagram using standard symbols</p> <p>2.3 Component and material requirements are identified from electronic circuit diagram and recorded</p>
3. Construct electronic circuit	<p>3.1 Tools, equipment and electronic components are sourced and selected according to manufacturer specifications and safety requirements</p> <p>3.2 Component manufacturer installation and connection information is read, interpreted and applied</p> <p>3.3 Circuit is constructed using <b><i>electronic components</i></b> according to manufacturer specifications and safety requirements</p>
4. Test electronic circuit	<p>4.1 Circuit fault testing equipment is identified and sourced according to workplace procedures, manufacturer specifications and safety requirements</p> <p>4.2 Electronic circuit is tested according to workplace procedures, manufacturer specifications and safety requirements</p> <p>4.3 Faults detected are corrected and circuit is re-tested to confirm their operation</p> <p>4.4 Circuit testing procedures and outcomes are recorded</p>
5. Complete work processes	<p>5.1 Final inspection is made to ensure work meets task instruction and workplace standards, and that electronic circuit is constructed ready for use or storage</p> <p>5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p>

ELEMENT	PERFORMANCE CRITERIA
	5.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 5.4 Workplace documentation is processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"> <li>locate appropriate sources of electronic circuit information and electrical test equipment operating procedures.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures relating to constructing basic electronic circuits</li> <li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li> </ul>
Oral communication skills to:	<ul style="list-style-type: none"> <li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>read and interpret numerical information imbedded in electronic components' identification codes</li> <li>use basic mathematical operations, including addition, subtraction, multiplication and division, when using Ohm's law and Watt's law to calculate electrical voltage, current flow, resistance and power</li> <li>read and interpret electrical test equipment correctly, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. <math>\Omega</math> for ohms).</li> </ul>
Planning and organising skills to:	<ul style="list-style-type: none"> <li>plan own work requirements and prioritise actions to achieve required outcomes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li> </ul>
Problem-solving skills to:	<ul style="list-style-type: none"> <li>identify potential or actual hazards and take action to minimise risk</li> <li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>set up and operate equipment and tools required to construct basic electronic circuits.</li> </ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including: <ul style="list-style-type: none"> <li>use of personal protective equipment, including safety glasses</li> <li>use of tools</li> <li>identification of electrical hazards</li> <li>applying procedures for disposing of used electronic circuit components and materials.</li> </ul> </li> </ul>
<b><i>Electronic circuit</i></b> must include:	<ul style="list-style-type: none"> <li>printed circuit board.</li> </ul>
<b><i>Electronic components</i></b> must include:	<ul style="list-style-type: none"> <li>heat sinks</li> <li>electronic wiring</li> <li>terminals</li> <li>solders</li> <li>switches</li> <li>lamps</li> <li>relays</li> <li>diodes</li> <li>resistors</li> <li>capacitors</li> <li>transistors.</li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURETR048 Construct and test basic electronic circuits

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly and safely construct and test two different basic electronic circuits.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements relating to the construction of basic electronic circuits, including:
  - use of personal protective equipment, including safety glasses
  - use of soldering irons
  - use of hand tools and electrical test equipment
  - identification of electrical risks and hazards
  - disposal of used electronic components
- meaning of electrical terms, including:
  - voltage
  - amperage
  - watts
  - current
  - resistance
- theory of electrical circuits, including:
  - Ohm's law
  - Watt's law
- types and application of electronic components, including:
  - heat sinks
  - electronic wiring
  - terminals
  - solder
  - switches
  - lamps
  - potentiometers
  - relays
  - diodes
  - resistors
  - capacitors
  - transistors
  - integrated circuits
- types, application and operation of basic electronic circuits, including:
  - flashing circuits
  - timing circuits
  - speed control circuits
  - methods for drawing electronic circuit diagrams
  - procedures for constructing basic electronic circuits
  - procedures for testing electronic circuits, and identifying and rectifying faults
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having constructed basic electronic circuits, e.g. circuit diagrams. Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace, including a safe work area for constructing electronic circuit boards
- personal protective equipment appropriate to the workplace, including safety glasses
- electronic components and materials, including:
  - heat sinks
  - electronic wiring
  - terminals
  - solders
  - switches
  - lamps
  - relays
  - diodes
  - resistors
  - capacitors
  - transistors.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURKTJ001 Remove, inspect and fit earthmoving and off-the-road tyres

### Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Minor changes to the application, performance criteria, foundation skills, range of conditions, performance evidence, knowledge evidence and assessment requirements

### Application

This unit describes the performance outcomes required to remove, inspect and fit earthmoving and off-the-road (OTR) tyres to construction, mining, agricultural and industrial vehicles. It involves removing the tyre from the rim; controlling risks; inspecting the tyre, wheel and rim assembly; recommending required repair action; fitting the tyre to the wheel and rim assembly; and preparing the tyre, wheel and rim assembly for use or storage.

It applies to those who fit tyres to wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Mechanical - Mobile Plant

### Unit Sector

Technical - Wheels and Tyres

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove tyre from wheel and rim assembly of a vehicle	1.1 Australian standards for earthmoving and OTR tyres, manufacturer instructions, workplace procedures and safety information are identified and interpreted 1.2 Site and task hazards are identified and control measures determined 1.3 <b><i>Safety requirements</i></b> are identified and applied 1.4 Tyre, rim and mounting system is identified 1.5 <b><i>Tools and equipment</i></b> are selected and checked according to manufacturer instructions and workplace procedures
2. Control risk	2.1 <b><i>Hazardous conditions in work environment</i></b> are identified and controlled 2.2 <b><i>Hazardous tyre and wheel and rim assembly conditions</i></b> are identified and controlled 2.3 Tyre is deflated according to Australian standards, manufacturer instructions and workplace procedures
3. Remove tyre from wheel and rim assembly	3.1 Australian standards and workplace procedures are accessed and interpreted to determine tyre removal procedures 3.2 Tyre is removed according to Australian standards and workplace procedures 3.3 Tyre removal is completed without causing component damage 3.4 Tyre and rim assembly are cleaned and visually inspected according to Australian standards and workplace procedures
4. Inspect tyre, wheel and rim assembly	4.1 Tyre is cleaned and visually inspected for damage and wear according to Australian standards and workplace procedures 4.2 Wheel and rim assembly are visually inspected for serviceability 4.3 <b><i>Mounting components and fasteners</i></b> are visually inspected for damage, wear, corrosion, foreign material and cracks according to workplace procedures
5. Recommend repair action and replace unserviceable parts and components	5.1 Inspection findings are recorded and reported according to workplace procedures 5.2 Recommended repair actions are documented according to workplace procedures 5.3 Unserviceable parts and components are replaced and reported according to workplace procedures
6. Fit tyre to wheel and rim	6.1 Workplace procedures for fitting tyres are accessed and

ELEMENTS	PERFORMANCE CRITERIA
assembly	interpreted 6.2 Tyre is fitted according to workplace procedures 6.3 Tyre and rim assembly are checked according to Australian standards and workplace procedures to confirm correct assembly and component compatibility and serviceability prior to inflation
7. Inflate tyre	7.1 Tyre inflation safety procedures are identified and applied prior to inflating tyre 7.2 Tyre is inflated according to Australian standards and workplace procedures 7.3 Tyre and rim assembly are monitored during inflation according to Australian standards and workplace procedures
8. Complete work processes	8.1 Final work inspection is conducted to ensure work is to required standard 8.2 Tyre, wheel and rim assembly are prepared for use or storage according to workplace procedures 8.3 Tools and equipment are checked, tagged where necessary, and stored according to workplace procedures 8.4 <b>Workplace documentation</b> is completed and processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance are not explicit in the performance criteria.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>• read and interpret:<ul style="list-style-type: none"><li>• written information in Australian standards, workplace procedures, manufacturer instructions, and occupational health and safety (OHS) and work health and safety (WHS) requirements relating to removing, inspecting and fitting earthmoving and OTR tyres</li></ul></li><li>• charts, lists, drawings and other applicable documents.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>• document inspection findings and recommend repair actions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>• ask questions to clarify instructions and procedures</li><li>• report inspection results</li><li>• brief team and customers.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>• read and interpret metric and imperial systems of measurement</li><li>• read and interpret mathematical information, including charts and drawings</li><li>• use specialist tools and measuring equipment, including:<ul style="list-style-type: none"><li>• gauges</li><li>• pressure testing guns.</li></ul></li></ul>
Digital literacy skills to:	<ul style="list-style-type: none"><li>• use workplace computerised technology and tools relating to the removal and refitting of earthmoving and OTR tyres.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>• plan and prioritise own work to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>• select and use appropriate equipment, materials, processes and procedures</li><li>• recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>• seek information and assistance as required to solve problems</li><li>• identify tyre condition and performance</li><li>• match tyres to wheel and rim assemblies and vehicle type.</li></ul>
Teamwork skills to:	<ul style="list-style-type: none"><li>• work with team members, such as riggers, doggers, mechanics, tyre fitters, drivers and site operators.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<p><b><i>Safety requirements</i></b> must include:</p>	<ul style="list-style-type: none"> <li>• those prescribed under Australian standards, OHS and WHS Acts and regulations, and workplace policies and procedures</li> <li>• hazard control</li> <li>• manual-handling techniques</li> <li>• personal protective clothing and equipment</li> <li>• using tools and equipment</li> <li>• working with dangerous or toxic substances:             <ul style="list-style-type: none"> <li>• chemicals</li> <li>• compressed air</li> <li>• nitrogen gas</li> <li>• polyurethane resin (PUR) tyre fill</li> <li>• tyre additive.</li> </ul> </li> </ul>
<p><b><i>Tools and equipment</i></b> must include:</p>	<ul style="list-style-type: none"> <li>• bead breakers</li> <li>• cranes</li> <li>• forklifts</li> <li>• grab trucks</li> <li>• hand tools</li> <li>• inflation and deflation tools</li> <li>• integrated tool handlers</li> <li>• jacks</li> <li>• lifting equipment</li> <li>• lock ring catcher</li> <li>• mufflers</li> <li>• pneumatic tools</li> <li>• power tools</li> <li>• soft face hammers</li> <li>• support stands</li> <li>• torque tools</li> <li>• tyre levers</li> <li>• wire brushes.</li> </ul>
<p><b><i>Hazardous conditions</i></b> must include:</p>	<ul style="list-style-type: none"> <li>• changing and unstable ground conditions</li> <li>• dust</li> <li>• hard, soft or uneven ground conditions</li> <li>• line of fire</li> <li>• noise</li> <li>• standard or non-standard heavy rims</li> </ul>

	<ul style="list-style-type: none"> <li>• traffic</li> <li>• variable weather conditions</li> <li>• working in or around other machinery.</li> </ul>
<b>Work environment</b> must include:	<ul style="list-style-type: none"> <li>• day and night</li> <li>• indoors and outdoors</li> <li>• interaction of work personnel</li> <li>• workshop or work site.</li> </ul>
<b>Hazardous tyre and wheel and rim assembly conditions</b> must include:	<ul style="list-style-type: none"> <li>• blocked or damaged valves</li> <li>• cracks</li> <li>• corrosion</li> <li>• cuts and damage</li> <li>• distortion</li> <li>• dislodged components</li> <li>• expired scheduled testing date</li> <li>• heat damage</li> <li>• leakage</li> <li>• mechanical damage</li> <li>• structural damage</li> <li>• tyre defects</li> <li>• under- or over-inflated tyre</li> <li>• valve gear</li> <li>• wear</li> <li>• wheel and rim component defects.</li> </ul>
<b>Mounting components and fasteners</b> must include:	<ul style="list-style-type: none"> <li>• adaptor rings</li> <li>• bolts</li> <li>• cleats</li> <li>• nuts</li> <li>• reducers</li> <li>• spacer bands</li> <li>• studs</li> <li>• washers</li> <li>• wedge bands</li> <li>• wedges.</li> </ul>
<b>Workplace documentation</b> must include:	<ul style="list-style-type: none"> <li>• job safety analysis</li> <li>• risk assessment</li> <li>• tyre change documentation.</li> </ul>

## Unit Mapping Information

AURKTJ001 Remove, inspect and fit earthmoving and off-the-road tyres.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURKTJ001 Remove, inspect and fit earthmoving and off-the-road tyres

### Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Minor changes to the application, performance criteria, foundation skills, range of conditions, performance evidence, knowledge evidence and assessment requirements

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, inspect and fit earthmoving and off-the-road (OTR) tyres on a minimum of three occasions
- perform the above work on tyres fitted to wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- Australian standards relevant to removing, inspecting and fitting earthmoving and OTR tyres
- procedures relating to earthmoving and OTR tyres:
  - fitting
  - hazard identification and risk control methods
  - inflation and deflation
  - inspection
  - post-fitting inspection
  - pre-removal inspection
- removal procedures of earthmoving and OTR wheel and rim assemblies relating to:
  - methods for undoing fasteners
  - methods for handling earthmoving and OTR wheel and rim assemblies
  - safety lock rim
  - split industrial rim
  - rim or hub-mounted multi-piece rim
  - one piece wheel and rim
- types and classifications of earthmoving and OTR tyres, rims and wheel assemblies
- types of mounting systems for earthmoving and OTR wheel and rim assemblies
- methods for deflating earthmoving and OTR tyres
- occupational health and safety (OHS) and work health and safety (WHS) requirements relevant to removing, inspecting and fitting earthmoving and OTR tyres.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- Australian standards relevant to removing, inspecting and fitting earthmoving and OTR tyres, wheels and rim assemblies
- crane
- earthmoving and OTR tyre handler
- earthmoving and OTR tyres, wheels and rim assemblies
- forklift
- grab truck
- integrated tool handler
- tyre, wheel and rim assembly specifications and workplace instructions
- tools and equipment appropriate for removing, inspecting and fitting earthmoving and OTR tyres
- OHS and WHS requirements and workplace procedures relevant to removing, inspecting and fitting earthmoving and OTR tyres
- workplace location or simulated workplace.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURKTJ002 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies

### Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Minor changes to the application, performance criteria, foundation skills, range of conditions, performance evidence, knowledge evidence and assessment requirements

### Application

This unit describes the performance outcomes required to remove, inspect and fit earthmoving and off-the-road (OTR) wheel and rim assemblies and fasteners.

It applies to those who fit wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Mechanical - Mobile Plant

### Unit Sector

Technical - Wheels and Tyres

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
1. Prepare to remove wheel and rim assembly from a vehicle	<p>1.1 Australian standards for earthmoving and OTR wheel and rim assemblies, workplace procedures and <b>safety requirements</b> are identified and interpreted</p> <p>1.2 Site and task hazards are identified and control measures determined</p> <p>1.3 <b>Wheel and rim assembly</b> to be removed is identified</p> <p>1.4 Wheel and rim assembly is cleaned and visually inspected to assess potential health and safety threats according to workplace procedures</p> <p>1.5 <b>Tools and equipment</b> are selected and checked according to manufacturer instructions and workplace procedures</p>
2. Control risk	<p>2.1 <b>Hazardous conditions in work environment</b> are identified and controlled</p> <p>2.2 <b>Hazardous wheel and rim assembly conditions</b> are identified and controlled</p>
3. Remove wheel and rim assembly from vehicle	<p>3.1 Vehicle is raised and supported according to Australian standards and workplace procedures</p> <p>3.2 Tyre is deflated according to Australian standards and workplace procedures</p> <p>3.3 Wheel and rim assembly is removed according to manufacturer instructions and workplace procedures</p>
4. Inspect wheel and rim assembly, mounting surfaces and fasteners	<p>4.1 Wheel and rim assembly is cleaned and visually inspected according to Australian standards and workplace procedures</p> <p>4.2 <b>Mounting components and fasteners</b> are visually inspected according to manufacturer instructions and workplace procedures</p> <p>4.3 Findings are recorded and reported according to Australian standards and workplace procedures</p>
5. Fit wheel and rim assembly	<p>5.1 Wheel and rim assembly is <b>checked and confirmed</b> prior to fastening</p> <p>5.2 Wheel and rim assembly is fitted using handling equipment according to Australian standards and workplace procedures</p> <p>5.3 Wheel and rim assembly positioning and alignment are checked prior to fastening</p> <p>5.41 Wheel and rim assembly tightening sequence and torque settings are applied according to Australian standards and workplace procedures</p>
6. Inflate tyre	<p>6.1 Tyre inflation safety procedures are identified and applied prior to inflating tyre</p> <p>6.2 Tyre is inflated according to Australian standards and workplace</p>

ELEMENTS	PERFORMANCE CRITERIA
	procedures 6.3 Tyre, wheel and rim assembly are monitored during inflation according to Australian standards and workplace procedures
7. Complete work processes	7.1 Vehicle is lowered according to Australian standards and workplace procedures 7.2 Wheel fastener torque settings are re-checked according to Australian standards and workplace procedures 7.3 Wheel and rim assembly clearances are checked 7.4 Final inspection is made to ensure work is to workplace requirements 7.5 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 7.6 <b>Workplace documentation</b> is completed and processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>• read and interpret:<ul style="list-style-type: none"><li>• written information in Australian standards, workplace procedures, manufacturer instructions, and occupational health and safety (OHS) and work health and safety (WHS) requirements relating to removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies</li><li>• charts, lists, drawings and other applicable documents.</li></ul></li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>• document inspection findings and recommended repair actions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>• follow oral instructions</li><li>• ask questions to clarify instructions and procedures</li><li>• report inspection results</li><li>• brief team and customers.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>• read and interpret metric and imperial systems of measurement</li><li>• use specialist tools and measuring equipment, including:<ul style="list-style-type: none"><li>• gauges</li><li>• pressure testing guns</li></ul></li><li>• read and interpret mathematical information, including charts and drawings.</li></ul>
Digital literacy skills to:	<ul style="list-style-type: none"><li>• use workplace computerised technology and tools relating to removing and refitting earthmoving and OTR wheel and rim assemblies.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>• plan and prioritise own work to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>• select and use appropriate equipment, materials, processes and procedures</li><li>• recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>• seek information and assistance as required to solve problems</li><li>• identify tyre condition and performance</li><li>• match wheel and rim assemblies to tyres and vehicle type.</li></ul>
Teamwork skills to:	<ul style="list-style-type: none"><li>• work with team members, such as riggers, doggers, mechanics, tyre fitters, drivers and site operators.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety requirements</i></b> must include:	<ul style="list-style-type: none"> <li>those prescribed under Australian standards, OHS and WHS Acts and regulations, and workplace policies and procedures</li> <li>hazard control</li> <li>manual-handling techniques</li> <li>personal protective clothing and equipment</li> <li>use of tools and equipment</li> <li>working with dangerous or toxic substances: <ul style="list-style-type: none"> <li>chemicals</li> <li>compressed air</li> <li>nitrogen gas</li> <li>polyurethane resin (PUR) tyre fill</li> <li>tyre additive.</li> </ul> </li> </ul>
<b><i>Wheel and rim assembly</i></b> must include:	<ul style="list-style-type: none"> <li>one piece wheel and rim</li> <li>rim or hub-mounted multi-piece rim</li> <li>rim or hub-mounted split rim</li> <li>safety lock rim</li> <li>split rim</li> <li>tyre and rim</li> <li>tyre and rim mounted to a hub.</li> </ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"> <li>bead breakers</li> <li>cranes</li> <li>earthmoving and OTR tyre handlers</li> <li>forklifts</li> <li>grab trucks</li> <li>hand tools</li> <li>inflation and deflation tools</li> <li>integrated tool handlers</li> <li>jacks</li> <li>lifting equipment</li> <li>lock ring catcher</li> <li>mufflers</li> <li>pneumatic tools</li> <li>power tools</li> <li>soft face hammers</li> <li>support stands</li> <li>torque tools</li> </ul>

	<ul style="list-style-type: none"> <li>• tyre levers</li> <li>• wire brushes.</li> </ul>
<b><i>Hazardous conditions</i></b> must include:	<ul style="list-style-type: none"> <li>• changing and unstable ground conditions</li> <li>• dust</li> <li>• hard, soft or uneven ground conditions</li> <li>• line of fire</li> <li>• noise</li> <li>• standard or non-standard heavy rims</li> <li>• traffic</li> <li>• variable weather conditions</li> <li>• working in or around other machinery.</li> </ul>
<b><i>Work environment</i></b> must include:	<ul style="list-style-type: none"> <li>• day and night</li> <li>• indoors and outdoors</li> <li>• interaction of work personnel</li> <li>• workshop or work site.</li> </ul>
<b><i>Hazardous wheel and rim assembly conditions</i></b> must include:	<ul style="list-style-type: none"> <li>• blocked or damaged valves</li> <li>• cracks</li> <li>• corrosion</li> <li>• cuts and damage</li> <li>• distortion</li> <li>• dislodged components</li> <li>• expired scheduled testing date</li> <li>• heat damage</li> <li>• leakage</li> <li>• mechanical damage</li> <li>• structural damage</li> <li>• tyre defects</li> <li>• under- or over-inflated tyre</li> <li>• valve gear</li> <li>• wear</li> <li>• wheel and rim component defects.</li> </ul>
<b><i>Mounting components and fasteners</i></b> must include:	<ul style="list-style-type: none"> <li>• adaptor rings</li> <li>• bolts</li> <li>• cleats</li> <li>• nuts</li> <li>• reducers</li> <li>• spacer bands</li> <li>• studs</li> <li>• washers</li> <li>• wedge bands</li> <li>• wedges.</li> </ul>

<b><i>Checked and confirmed</i></b> must include:	<ul style="list-style-type: none"><li>• component compatibility</li><li>• wheel and rim component serviceability</li><li>• correct assembly of wheel and rim assembly.</li></ul>
<b><i>Workplace documentation</i></b> must include:	<ul style="list-style-type: none"><li>• job safety analysis</li><li>• risk assessment</li><li>• tyre change documentation.</li></ul>

## Unit Mapping Information

AURKTJ002 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURKTJ002 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies

### Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Minor changes to the application, performance criteria, foundation skills, range of conditions, performance evidence, knowledge evidence and assessment requirements

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, inspect and fit earthmoving and off-the-road (OTR) wheel and rim assemblies on a minimum of three occasions
- perform the above work on wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- Australian standards relevant to removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies
- procedures relating to earthmoving and OTR wheel and rim assemblies:
  - fitting
  - hazard identification and risk control methods
  - inflation and deflation
  - inspection
  - post-fitting inspection
  - pre-removal inspection
- raising, supporting and lowering procedures for mining and construction vehicles that include soft ground support procedures and systems
- removal procedures of earthmoving and OTR wheel and rim assemblies:
  - methods for undoing wheel or rim fasteners
  - handling methods
  - safety lock rim
  - split industrial rim
  - rim or hub-mounted multi-piece rim
  - one piece wheel and rim
- types and classifications of earthmoving and OTR tyres, wheels and rim assemblies
- types of mounting systems for earthmoving and OTR wheel and rim assemblies
- methods for deflating earthmoving and OTR tyres
- occupational health and safety (OHS) and work health and safety (WHS) requirements relevant to removing, inspecting and fitting earthmoving and OTR tyres.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- Australian standards relevant to removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies
- crane
- earthmoving and OTR tyre handler
- earthmoving and OTR wheel and rim assemblies
- forklift
- grab truck
- integrated tool handler
- OHS and WHS requirements relevant to removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies
- tools and equipment appropriate for removing and fitting earthmoving and OTR wheel and rim assemblies
- tyre, wheel and rim assembly specifications and workplace instructions
- operational vehicles with earthmoving and OTR wheel and rim assemblies
- workplace location or simulated workplace.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURKTJ003 Perform minor repairs to earthmoving and off-the-road tyres

### Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Updated to correct data
Release 3	Minor changes to elements, foundation skills, performance evidence and knowledge evidence

### Application

This unit describes the performance outcomes required to inspect and perform minor repairs to earthmoving and off-the-road (OTR) tyres.

It applies to those who fit earthmoving and OTR tyres, wheel and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Mechanical - Mobile Plant

### Unit Sector

Technical - Wheels and Tyres

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for inspection of tyre	1.1 Australian standards for earthmoving and OTR tyres, workplace procedures and safety information are identified and interpreted 1.2 Site and task hazards are identified and control measures determined 1.3 Initial workplace documentation for tyre inspection is completed 1.4 Tyre is prepared and cleaned for inspection 1.5 Tyre is positioned and secured for inspection
2. Inspect tyre	2.1 Extent and nature of internal and external tyre damage are identified 2.2 Damage is categorised in line with Australian standards 2.3 Repairable and non-repairable damage and extent of repairs are identified 2.4 Overall repairability of tyre is determined
3. Carry out minor repair	3.1 Information on appropriate manufacturer instructions and Australian standards is accessed and interpreted 3.2 Task hazards and risks are identified, and risk controls are applied to equipment to be used 3.3 Minor repair to tyre is carried out according to workplace procedures, manufacturer instructions and Australian standards
4. Complete work processes	4.1 Workplace documentation relating to tyre repair is completed 4.2 Inspection documentation is completed according to Australian standards 4.3 Tyre is stored according to workplace procedures 4.4 Work area is cleared and waste materials disposed of, reused or recycled according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>identify information and assistance in manufacturer instructions and Australian standards relating to the inspection and repair of earthmoving and OTR tyres</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>read and interpret information in:<ul style="list-style-type: none"><li>written Australian standards, workplace procedures and manufacturer instructions</li><li>charts, lists, drawings and other applicable documents.</li></ul></li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>document required repair actions</li><li>complete inspection documentation.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>ask questions to clarify instructions and procedures</li><li>report inspection and repair results.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret metric and imperial systems of measurement.</li><li>read and interpret mathematical information, including charts and drawings</li><li>use specialist tools and measuring equipment, including:<ul style="list-style-type: none"><li>gauges</li><li>pressure testing guns.</li></ul></li></ul>
Digital literacy skills to:	<ul style="list-style-type: none"><li>use workplace computerised technology and tools relating to the inspection and repair of earthmoving and OTR tyres.</li></ul>
Initiative skills to:	<ul style="list-style-type: none"><li>plan and prioritise own work to achieve required outcomes.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>select and use appropriate equipment, materials, processes and procedures when inspecting and repairing tyres</li><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>seek information and assistance as required to solve problems</li><li>identify tyre condition and determine repair requirements.</li></ul>

## Unit Mapping Information

AURKTJ003 Perform minor repairs to earthmoving and off-the-road tyres

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURKTJ003 Perform minor repairs to earthmoving and off-the-road tyres

### Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Updated to correct data
Release 3	Minor changes to elements, foundation skills, performance evidence and knowledge evidence

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- inspect and perform minor repairs to earthmoving and off-the-road (OTR) tyres on a minimum of three occasions on different earthmoving and OTR tyres
- perform the above work on wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- Australian standards and manufacturer instructions relevant to inspecting and repairing earthmoving and OTR tyres
- hazard identification procedures and risk control methods relevant to inspecting and repairing earthmoving and OTR tyres
- inspection procedures for earthmoving and OTR tyres
- indicators of tyre damage
- procedures for identifying and undertaking minor repairs to earthmoving and OTR tyres
- procedures for reporting damage and repair work on earthmoving and OTR tyres
- types of tyre damage, including repairable and non-repairable damage.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- Australian standards relevant to the inspection and minor repair of earthmoving and OTR tyres
- earthmoving and OTR tyres
- manufacturer instructions and workplace procedures relevant to inspecting and repairing earthmoving and OTR tyres
- tools and equipment appropriate for the inspection and minor repair of earthmoving and OTR tyres
- workplace location or simulated workplace.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURKTJ005 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to select earthmoving and off-the-road (OTR) vehicle tyres, wheels and rim assemblies to suit specific applications. It involves identifying and confirming work requirements; preparing for work; selecting tyres, wheels and rim assemblies; and completing work finalisation processes.

It applies to those working on earthmoving and OTR vehicle tyres, wheels and rim assemblies in the mining, construction and other industrial environments.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Mechanical - Mobile Plant

### Unit Sector

Technical - Wheels and Tyres

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to select tyres, wheels and rim assemblies	1.1 Customer and job requirements are determined 1.2 Workplace instructions and information required to select tyres, wheels and rim assemblies are sourced
2. Determine appropriate tyres, wheels and rim assemblies	2.1 Information required to select earthmoving and OTR tyres, wheels and rim assemblies is accessed from manufacturer and component supplier specifications 2.2 Tyre, wheel and rim assembly options are analysed to identify technical compliance, economic benefits and operational requirements 2.3 Selection procedures are carried out according to workplace instructions and work health and safety (WHS) requirements 2.4 Product is selected according to customer requirements, manufacture and component supplier specifications
3. Complete selection of tyres, wheels and rim assemblies	3.1 Customer is briefed on product selection 3.2 Required documentation regarding selection is completed

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>identify sources of information and assistance in selecting earthmoving and OTR tyres, wheels and rim assemblies.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>read and interpret written information in: job instructions manufacturer and component supplier specifications workplace instructions.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>complete workplace documentation</li><li>document product selection.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>ask questions to clarify instructions, procedures or customer requirements</li><li>brief customer on product selection</li><li>follow oral instructions.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret both metric and imperial systems of measurement.</li><li>interpret numerical information in: job instructions manufacturer and component supplier specifications workplace instructions relating to wheels, rim assemblies, and tyres.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>seek information and assistance to solve problems.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURKTJ005 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must have competently selected a minimum of two different earthmoving and off-the-road (OTR) tyres, wheels and rim assemblies.

Individuals must demonstrate they can:

- access and interpret information required for selecting tyres, wheels and rim assemblies
- select a range of earthmoving and OTR vehicle tyres, wheels and rim assemblies according to customer, workplace, manufacturer and component supplier requirements, observing safety procedures and requirements.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- Australian standards relating to earthmoving and OTR vehicle tyres, wheels and rim assemblies
- work health and safety requirements relating to selecting earthmoving and OTR vehicle tyres, wheels and rim assemblies
- earthmoving and OTR vehicle tyres, wheels and rim assembly terminology and codes
- earthmoving and OTR tyre tread patterns; and tyre and wheel and rim assembly types and their applications.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- workplace location or simulated workplace
- Australian standards relating to earthmoving and OTR vehicle tyres, wheels and rim assemblies
- earthmoving and OTR vehicles with tyres, wheels and rim assemblies
- manufacturer and component supplier specifications
- workplace instructions.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURKTJ006 Use earthmoving and off-the-road tyre handlers

### Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Minor changes to the application, elements, performance evidence and knowledge evidence

### Application

This unit describes the performance outcomes required to use an earthmoving and off-the-road (OTR) tyre handler. It includes checking the tyre handler and work site for suitability, operating the tyre handler, and completing work according to operational requirements.

It applies to those who fit earthmoving and OTR tyres, wheels and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Earthmoving and OTR tyre handlers must be operated in compliance with the licence requirements and regulations of the relevant state or territory authority.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Mechanical - Mobile Plant

### Unit Sector

Technical - Wheels and Tyres

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Check tyre handler and work site for suitability	1.1 Work site is selected for operations 1.2 Work area is checked for obstructions and proximity to vehicles and equipment 1.3 Barriers and warning signs are erected in areas where there may be passing traffic 1.3 Specialist equipment and tools are selected 1.4 Tyre handler is inspected for serviceability and compliance with relevant Australian standards
2. Operate tyre handler	2.1 Tyre handler pre-operational checks are conducted, and any operating hazards identified and addressed 2.2 Tyre handler, and specialist equipment and tools are operated within safe working limits and to maximise efficiency of operations 2.3 Tyres, wheels and rim assemblies are handled according to workplace procedures and Australian standards
3. Complete work processes	2.4 Barriers and warning signs are removed and stored 2.5 Tyre handler, and specialist equipment and tools are returned to appropriate storage or parking area 2.6 Documentation is completed, reporting any <b><i>damage or faults</i></b>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"> <li>read and interpret written information in Australian standards and workplace procedures relating to the use of earthmoving and OTR tyre handlers.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>document actions required during work.</li> </ul>
Oral communication skills to:	<ul style="list-style-type: none"> <li>report damage or faults.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>interpret vehicle instruments and indicators</li> <li>read and interpret metric and imperial systems of measurement.</li> </ul>
Initiative skills to:	<ul style="list-style-type: none"> <li>identify and avoid potential work obstructions and danger to passing traffic.</li> </ul>
Planning and organising skills to:	<ul style="list-style-type: none"> <li>prepare and lay out work area, and obtain equipment and material to avoid wastage, backtracking and workflow interruptions.</li> </ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Damage or faults</i></b> must include:	<ul style="list-style-type: none"> <li>specialist equipment and tool damage</li> <li>tyre, wheel and rim assembly damage</li> <li>tyre handler damage or faults</li> <li>work area damage.</li> </ul>
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## Unit Mapping Information

AURKTJ006 Use earthmoving and off-the-road tyre handlers

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURKTJ006 Use earthmoving and off-the-road tyre handlers

### Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Minor changes to the application, elements, performance evidence and knowledge evidence

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- use an earthmoving and off-the-road (OTR) tyre handler on a minimum of three occasions, demonstrating that they can:
- observe safety procedures and requirements when operating earthmoving and OTR tyre handlers
- select methods and techniques to operate an earthmoving and OTR tyre handler appropriate to the circumstances
- perform the above work on wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- Australian standards and workplace procedures relevant to operating an earthmoving and OTR tyre handler
- duty of care requirements relating to operating an earthmoving and OTR tyre handler
- handling procedures for earthmoving and OTR tyre handlers
- earthmoving and OTR tyre handler controls, instruments and indicators and their use
- operating hazards and procedures to be followed in the event of an operational emergency
- procedures for pre-operational checks
- factors affecting selection of work site, including site layout and obstacles
- typical damage and faults related to operating earthmoving and off-the-road tyre handlers, including:
  - specialist equipment and tool damage
  - tyre, wheel and rim assembly damage
  - tyre handler damage or faults
  - work area damage.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. vehicle log books.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- Australian standards relevant to the use of an earthmoving and OTR tyre handler
- earthmoving and OTR tyre and wheel and rim assemblies
- tools and equipment appropriate to the use of an earthmoving and OTR tyre handler
- earthmoving and OTR tyre handler
- operational vehicles with earthmoving and OTR tyres, wheel and rim assemblies
- workplace instructions relating to the use of earthmoving and OTR tyre handlers
- workplace location or simulated workplace.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTA027 Carry out basic vehicle servicing operations

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to carry out basic vehicle servicing operations. It requires the learner to plan and prepare the servicing task; select the correct equipment and service the major vehicle systems according to manufacturer servicing procedures and specifications; record findings; maintain the work area; and check and store the servicing tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan to carry out basic vehicle servicing operations	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2. Task instruction is interpreted and <b><i>vehicle</i></b> to be serviced is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for basic vehicle servicing operations are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 Tools and equipment required for vehicle servicing are identified according to manufacturer specifications</p>
2. Carry out basic vehicle servicing operations	<p>2.1 Tools and equipment are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 <b><i>Basic vehicle servicing operations</i></b> are carried out according to workplace procedures, manufacturer specifications and safety and environmental requirements</p> <p>2.3 Observations of worn vehicle components or issues requiring further exploration are recorded</p> <p>2.4 Basic vehicle servicing operation procedures are recorded</p>
3. Complete work processes	<p>3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and serviced vehicle is presented ready for use or storage according to workplace procedures</p> <p>3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>3.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary</p> <p>3.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle servicing information and servicing equipment operating procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to perform basic vehicle servicing operations</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret metric and imperial systems of measurement</li><li>read and interpret mathematical information, including charts and drawings</li><li>use specialist tools and measuring equipment, including gauges</li><li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate volumes and ratios.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to perform basic vehicle servicing operations.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including: <ul style="list-style-type: none"> <li>use of personal protective equipment, including safety glasses, ear protection and safety footwear</li> <li>use of hand tools and lifting equipment</li> <li>application of procedures for handling, storing and disposing of used oil, lubricants and coolants.</li> </ul> </li> </ul>
<b><i>Vehicle</i></b> must include one or more of the following:	<ul style="list-style-type: none"> <li>passenger or light commercial motor vehicle</li> <li>motorcycle</li> <li>constructed vehicle.</li> </ul>
<b><i>Basic vehicle servicing operations</i></b> must include:	<ul style="list-style-type: none"> <li>servicing the following: <ul style="list-style-type: none"> <li>engine and exhaust system</li> <li>drive belt</li> <li>cooling system</li> <li>transmission and final drive</li> <li>tyres, suspension and steering</li> <li>fuel and intake system</li> <li>electrical system</li> <li>braking system</li> <li>body fittings and pedal rubbers.</li> </ul> </li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTA027 Carry out basic vehicle servicing operations

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly perform basic servicing operations on a minimum of two different operational vehicles.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements relating to basic vehicle servicing operations, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting equipment
  - safety data sheets (SDS) and procedures for handling, storing and disposing of used oil, lubricants, coolants, transmission and brake fluids
  - reasons for servicing vehicles
- basic vehicle servicing procedures, including:
  - servicing the engine:
    - checking for leaks, worn or loose fittings, cracks or other damage
    - changing the engine oil
    - changing the oil filter
  - servicing the drive belt:
    - checking for cracks, fraying, oil soaking and glazing at the belt to pulley contact area
    - adjusting the belt
  - servicing the cooling system:
    - checking for leaks, signs of corrosion, damaged or cracked hoses, worn or loose fittings
    - topping up the coolant
  - servicing transmission and final drive systems:
    - checking for leaks, worn or loose fittings, cracks or other damage
    - checking and topping up transmission and final drive lubricant level
    - topping up the clutch master cylinder fluid
  - servicing the tyres and suspension and steering system:
    - checking for leaks, splits in rubber boots, worn or loose fittings, and tyre wear
    - adjusting air pressure
    - lubricating ball joints
    - topping up power steering reservoir fluid
  - servicing the fuel system:
    - checking for leaks, worn or loose fittings, cracks or other damage
    - replacing air filters
  - servicing the electrical system:
    - checking the lighting system
    - checking and topping up the battery
  - servicing the brakes:
    - checking for leaks, wear, excessive heat damage, cracks or other damage
    - topping up the master cylinder fluid
  - other tasks, including checking:
    - windscreen wipers

- windscreen washers (fluid level)
  - heating, ventilation and air-conditioning (HVAC) operation
  - body panels
  - exhaust system
  - mirrors
  - condition of foot pedal rubbers
- hand and power tools and equipment used in vehicle servicing
  - work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two vehicles for servicing
- automotive hand and power tools and lifting and supporting equipment
- automotive fluids and oils, including:
  - engine oil
  - transmission oil
  - brake fluid.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTB007 Remove and replace brake assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and replace the front and rear brake assemblies of a vehicle. It requires the learner to plan and prepare the task; identify types of brake assemblies; inspect components and identify their function; remove and replace the front and rear brake assemblies; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Brakes

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace brake assemblies	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and vehicle brake assemblies to be worked on are identified</p> <p>1.3 Manufacturer specifications and workplace procedures for brake assemblies removal and replacement are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 Tools and equipment required for removing and replacing brake assemblies are identified according to manufacturer specifications</p>
2. Remove and inspect brake assemblies	<p>2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 Vehicle is prepared for brake assemblies removal according to workplace procedures and safety and environmental requirements</p> <p>2.3 <b><i>Brake assemblies</i></b> are removed according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment</p> <p>2.4 Brake assemblies' components are arranged, identified and inspected according to manufacturer specifications</p> <p>2.5 Brake assemblies' inspection results are recorded</p>
3. Replace brake assemblies	<p>3.1 Brake assemblies are prepared for replacement</p> <p>3.2 Brake assemblies are replaced according to workplace procedures, manufacturer specifications, and safety and environmental requirements, and without causing damage to components, tools or equipment</p> <p>3.3 Brake assemblies are adjusted and bled</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use or storage according to workplace procedures</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>4.3 Tools and equipment are checked and stored according to</p>

ELEMENTS	PERFORMANCE CRITERIA
	workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle braking system information and brake assembly removal and replacement procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace front and rear brake assemblies</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information in brake system component identification codes</li><li>use specialist tools and measuring equipment correctly, including verniers, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)</li><li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to remove and replace front and rear brake assemblies.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of hand tools and lifting equipment</li><li>• application of procedures for handling and disposing of used brake fluid, lubricants and asbestos-based products, including brake dust.</li></ul></li></ul>
<b><i>Brake assemblies</i></b> must include:	<ul style="list-style-type: none"><li>• both front disc brake assemblies</li><li>• both rear drum brake assemblies.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTB007 Remove and replace brake assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace the brake assemblies of at least two different vehicles.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting equipment
  - safety data sheets (SDS) and procedures for handling and disposing of waste brake fluid, lubricants and asbestos-based products, including brake dust
- types, application and basic operation of brake assembly, including:
  - disc brake systems
  - drum brake systems
  - hand brake systems
  - brake fluids
- brake assembly function and basic principles of operation
- brake assembly component names and their functions
- brake assembly dismantling procedures, including:
  - disc caliper, pad and disc removal
  - brake drum, shoes and wheel cylinder removal
- brake assembly inspection procedures, including:
  - brake hose serviceability
  - disc thickness
  - disc runout
  - brake shoe serviceability
  - brake drum wear
- brake assembly replacement procedures, including:
  - disc pad replacement
  - caliper pin lubrication
  - disc replacement
  - brake cylinder and shoe replacement
  - bleeding and adjustment procedures
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced front and rear brake assemblies, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two vehicles fitted with front and rear brake assemblies, including disc and drum brake assemblies
- tools and special equipment, including lifting equipment.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTC004 Remove and replace radiators

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and replace the radiator of a vehicle. It requires the learner to plan and prepare the task; remove the radiator and inspect it and its associated components; replace the radiator; top up the cooling system and check for leaks; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Cooling Systems

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace radiator	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and vehicle radiator to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for radiator removal and replacement are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 Tools and equipment required for removing and replacing radiator are identified according to manufacturer specifications</p>
2. Remove radiator	<p>2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 Vehicle is prepared for radiator removal according to workplace procedures and safety and environmental requirements</p> <p>2.3 <b><i>Vehicle radiator</i></b> is removed according to workplace procedures and manufacturer specifications, and without causing damage to components, tools or equipment</p> <p>2.4 Radiator and associated components are inspected according to manufacturer specifications</p> <p>2.5 Results of inspection of radiator and its associated components are recorded</p>
3. Replace radiator	<p>3.1 Radiator is prepared for replacement</p> <p>3.2 Radiator is replaced according to workplace procedures, manufacturer specifications, and safety and environmental requirements, and without causing damage to components, tools or equipment</p> <p>3.3 <b><i>Cooling system is tested</i></b> according to manufacturer specifications</p> <p>3.4 Cooling system test results are recorded</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use or storage according to workplace procedures</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p>

ELEMENTS	PERFORMANCE CRITERIA
	4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of information on vehicle cooling system and radiator removal and refitting procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace radiators</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information in cooling system information</li><li>use specialist tools and measuring equipment correctly, including pressure testers, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. kPa for kilopascals)</li><li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios of coolant.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to remove and replace radiators.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of automotive hand tools</li><li>• application of procedures for handling and disposing of used coolant.</li></ul></li></ul>
<b><i>Vehicle radiator</i></b> must include:	<ul style="list-style-type: none"><li>• radiator for an engine with a liquid cooling system.</li></ul>
<b><i>Cooling system is tested</i></b> must include:	<ul style="list-style-type: none"><li>• pressure-testing the cooling system.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

# Assessment Requirements for AURTTTC004 Remove and replace radiators

## Modification History

Release	Comment
Release 1	New unit of competency

## Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly and safely remove and replace the radiators of at least two different vehicles or engine assemblies.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of automotive hand tools and lifting equipment
  - safety data sheets (SDS) and procedures for handling and disposing of used coolant
- types, application and basic operation of radiators, including:
  - vertical flow radiators
  - cross flow radiators
  - cooling system coolants and additives
  - radiator hoses and clamps
- radiator removal procedures, including procedures for catching and storing engine coolant
- radiator and associated component inspection procedures
- radiator replacement procedures, including:
  - calculating coolant system filling and additive concentration
  - coolant system bleeding
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced radiators, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two motor vehicles or engine assemblies with engines with a liquid cooling system
- automotive hand tools and special equipment, including cooling system pressure tester.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTID006 Remove and replace vehicle front suspension springs

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and replace the front suspension springs of a vehicle. It requires the learner to plan and prepare the task; remove the springs and inspect them and associated components; replace the springs and check the vehicle ride height; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Steering and Suspension

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace vehicle front suspension springs	<p>1.1 <b><i>Safety requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and vehicle suspension to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for removing and replacing suspension springs are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 Tools and equipment required for suspension spring removal and replacement are identified according to manufacturer specifications</p>
2. Remove and inspect front suspension springs	<p>2.1 <b><i>Tools, equipment and materials</i></b> are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 Vehicle is prepared for suspension springs removal according to workplace procedures and safety requirements</p> <p>2.3 <b><i>Front suspension springs</i></b> are removed according to workplace procedures and safety requirements, and without causing damage to components, tools or equipment</p> <p>2.4 Front suspension spring components are arranged, identified and inspected according to manufacturer specifications</p> <p>2.5 Results of inspecting front suspension spring components are recorded</p>
3. Replace front suspension springs	<p>3.1 Front suspension components are prepared for assembly</p> <p>3.2 Front suspension is assembled according to workplace procedures, manufacturer specifications and safety requirements, and without causing damage to components, tools and equipment</p> <p>3.3 Vehicle ride height is checked according to manufacturer specifications</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use or storage according to workplace procedures</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p>

ELEMENTS	PERFORMANCE CRITERIA
	4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance criteria and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle suspension system information and suspension spring removal and replacement procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace vehicle front suspension springs</li><li>select and interpret key information from workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information in suspension system information</li><li>use specialist tools and measuring equipment correctly, including tape measures, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)</li><li>use basic mathematical operations, including addition and subtraction to calculate length.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to remove and replace vehicle front suspension springs.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of hand tools and lifting equipment.</li></ul></li></ul>
<b><i>Tools, equipment and materials</i></b> must include:	<ul style="list-style-type: none"><li>• automotive hand tools</li><li>• lifting and supporting equipment</li><li>• related special tools, including spring compressors.</li></ul>
<b><i>Front suspension spring</i></b> must include:	<ul style="list-style-type: none"><li>• front suspension springs from one of the following:<ul style="list-style-type: none"><li>• passenger or light commercial vehicle</li><li>• motor cycle</li><li>• constructed vehicle.</li></ul></li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTID006 Remove and replace vehicle front suspension springs

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace the front suspension springs of at least two different vehicles.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
  - dangers of working with stored energy in suspension springs
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting and supporting equipment
- types, application and basic operation of front suspension springs, including:
  - MacPherson strut
  - coil springs
- suspension spring removal procedures, including procedures for compressing springs
- suspension spring and associated component inspection procedures
- suspension spring replacement procedures, including ride height measurement procedures
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced front suspension springs, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two vehicles with complete front suspension assemblies
- tools and special equipment, including lifting and supporting equipment.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTID007 Remove and replace steering assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and replace the steering assemblies of a vehicle. It requires the learner to plan and prepare the task; remove the steering assembly and inspect it and its associated components; replace the steering assembly; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Steering and Suspension

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace a steering assembly	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and vehicle steering assembly to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for removing and replacing steering assembly are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 <b><i>Tools and equipment</i></b> required for removing and replacing steering assembly are identified according to manufacturer specifications</p>
2. Remove and inspect steering assembly	<p>2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 Vehicle is prepared for steering assembly removal according to workplace procedures and safety and environmental requirements</p> <p>2.3 <b><i>Vehicle steering assembly</i></b> is removed according to workplace procedures and manufacturer specifications and safety and environmental requirements, and without causing damage to components, tools or equipment</p> <p>2.4 Steering assembly components are arranged, identified and inspected according to manufacturer specifications</p> <p>2.5 Results of inspecting steering system components are recorded</p>
3. Replace steering assembly	<p>3.1 Steering assembly components are prepared for assembly</p> <p>3.2 Steering assemblies are replaced according to workplace procedures, manufacturer specifications and safety and environmental requirements, and without causing damage to components, tools or equipment</p> <p>3.3 Front wheel toe-in is measured and adjusted according to manufacturer specifications</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle steering assembly is presented ready for use or storage according to workplace procedures</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored</p>

ELEMENTS	PERFORMANCE CRITERIA
	<p>according to environmental requirements and workplace procedures</p> <p>4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary</p> <p>4.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance criteria and is not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle steering system information and steering assembly removal and replacement procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace vehicle steering assemblies</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information in steering system information</li><li>use specialist tools and measuring equipment correctly, including tape measures, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)</li><li>use basic mathematical operations, including addition and subtraction to calculate length.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including: <ul style="list-style-type: none"> <li>use of personal protective equipment, including safety glasses, ear protection and safety footwear</li> <li>use of hand tools and vehicle lifting equipment</li> <li>applying procedures for handling and disposing of used steering system fluids.</li> </ul> </li> </ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"> <li>automotive hand tools</li> <li>vehicle lifting equipment</li> <li>product-related special tools, such as ball joint breakers.</li> </ul>
<b><i>Vehicle steering assemblies</i></b> must include:	<ul style="list-style-type: none"> <li>assembly from one of the following: <ul style="list-style-type: none"> <li>light vehicle</li> <li>light commercial vehicle</li> <li>motorcycle</li> <li>constructed vehicle.</li> </ul> </li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTID007 Remove and replace steering assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace steering assemblies of at least two different vehicles.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements relating to the removal and replacement of steering assemblies, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and vehicle lifting equipment
  - procedures for handling and disposing of used steering system fluids
- types, application and basic operation of steering assemblies, including:
  - manual steering
  - power assisted steering
- steering assembly removal procedures
- steering assembly and associated component inspection procedures
- steering assembly replacement procedures, including front toe-in measuring and adjustment procedures
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced steering assemblies, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two vehicles fitted with steering assemblies
- tools and equipment, including lifting equipment.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTE006 Remove and replace conventional engine assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and replace the conventional engine assembly of a vehicle. It requires the learner to plan and prepare the task; remove the engine and inspect the associated components; replace the engine and check its operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Engines

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan and prepare for engine removal and replacement	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and vehicle to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for engine removal and replacement are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 <b><i>Tools and equipment</i></b> required for engine removal and replacement are identified according to manufacturer specifications</p>
2. Remove engine assembly and inspect engine and associated components	<p>2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and workplace safety procedures</p> <p>2.2 Vehicle is prepared for engine removal according to workplace procedures and safety and environmental requirements</p> <p>2.3 <b><i>Engine and associated components</i></b> are identified and inspected according to manufacturer specifications</p> <p>2.4 <b><i>Engine</i></b> is removed according to workplace procedures, manufacturer specifications and safety requirements, and without causing damage to components, tools or equipment</p> <p>2.5 Engine and associated component inspection results are recorded</p>
3. Replace engine assembly	<p>3.1 Engine and associated components are prepared for assembly</p> <p>3.2 Engine is replaced according to workplace procedures, manufacturer specifications and safety requirements, and without causing damage to components, tools or equipment</p> <p>3.3 Engine fluid levels are checked and topped up with the appropriate lubricant and coolant according to manufacturer specifications and procedures</p> <p>3.4 Engine and vehicle is tested for correct operation</p>

ELEMENTS	PERFORMANCE CRITERIA
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and engine or vehicle is presented ready for use</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>4.3 Tools and equipment are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary</p> <p>4.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance criteria and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of engine information and engine removal and replacement procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace engines</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information in engine information</li><li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios and volumes.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to complete engine removal and replacement.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to complete engine removal and replacement.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of hand tools and lifting equipment</li><li>• collection and disposal of used engine lubricants and coolant.</li></ul></li></ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"><li>• engine lifting equipment and related special tools.</li></ul>
<b><i>Engine and associated components</i></b> must include:	<ul style="list-style-type: none"><li>• cooling system components</li><li>• electrical system components</li><li>• exhaust system components</li><li>• fuel system components.</li></ul>
<b><i>Engine</i></b> must include:	<ul style="list-style-type: none"><li>• an engine in a front engine, rear wheel drive vehicle.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTE006 Remove and replace conventional engine assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace at least one engine assembly from a conventional rear wheel drive vehicle.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of safety glasses, ear protection and safety footwear
  - use of engine lifting equipment
  - collection and disposal of used engine lubricants and coolant
- types, application and basic operation of engines, including:
  - multi-cylinder configurations
  - petrol and diesel classifications
  - engine lubrication requirements, including types and classifications of engine lubricants
- engine assembly removal procedures
- engine assembly and associated component inspection procedures, including procedures for inspecting:
  - cooling system components
  - electrical system components
  - exhaust system components
  - fuel system components
- engine assembly replacement procedures, including pre-startup checks and post-startup checks
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced the engine assembly, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- an operable vehicle with rear wheel drive
- automotive tools, engine assembly lifting equipment and attachments
- engine oil
- engine coolant.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTE007 Dismantle and assemble single cylinder four-stroke petrol engines

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to dismantle and reassemble a single cylinder four-stroke engine. It requires the learner to plan and prepare the task; dismantle the engine and inspect the components; reassemble the engine and check the engine operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Engines

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to dismantle and re-assemble a single cylinder four-stroke petrol engine	1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted 1.2 Task instruction is interpreted and engine to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for engine dismantle and assembly are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 <b><i>Tools and equipment</i></b> required for dismantling and assembling four-stroke petrol engine are identified according to manufacturer specifications
2. Dismantle engine and clean its components	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 Engine is cleaned according to manufacturer specifications and workplace procedures 2.3 <b><i>Engine</i></b> is dismantled without causing damage to components, tools or equipment 2.4 Engine components are cleaned and arranged for identification according to workplace procedures
3. Identify, inspect and measure engine components	3.1 Measuring equipment and tools are selected and checked according to manufacturer specifications and workplace safety procedures 3.2 Engine components are measured and results compared against manufacturer specifications 3.3 Engine bearing information is sourced and interpreted, and engine bearing type and associated loads are identified 3.4 Information on engine seals, sealants and gaskets is sourced and interpreted, and engine seals, sealants and gaskets are identified 3.5 Engine component inspection results are recorded
4. Inspect engine cooling system and components and identify type	4.1 Information on the function, type, and components of cooling system is sourced and interpreted 4.2 Cooling system components are identified and inspected according to manufacturer specifications 4.3 Cooling system component inspection results are recorded
5. Re-assemble engine and	5.1 Engine components are prepared for assembly according to

ELEMENTS	PERFORMANCE CRITERIA
perform operational tests	<p>manufacturer specifications and safety and environmental requirements</p> <p>5.2 Engine is assembled according to manufacturer specifications, and without causing damage to components, tools and equipment</p> <p>5.3 Engine is tested for correct assembly and operation</p> <p>5.4 Engine assembly and testing procedures are recorded</p>
6. Complete work processes	<p>6.1 Final inspection is made to ensure work meets task instruction and workplace standards, and engine is presented ready for use or storage according to workplace procedures</p> <p>6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>6.3 Tools and equipment are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary</p> <p>6.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle engine information and engine dismantle and reassembly procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely dismantle and assemble a single cylinder four-stroke engine</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information in engine information</li><li>use specialist tools and measuring equipment correctly, including verniers and micrometers, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)</li><li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances and ratios.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:               <ul style="list-style-type: none"> <li>use of safety glasses, ear protection and safety footwear</li> <li>use of engine dismantling and re-assembly equipment</li> <li>collection and disposal of used engine lubricants and coolant.</li> </ul> </li> </ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"> <li>micrometers and other measurement instruments</li> <li>torque wrench.</li> </ul>
<b><i>Engine</i></b> must include one or more of the following:	<ul style="list-style-type: none"> <li>operational single cylinder four-stroke petrol engine with air/direct cooling</li> <li>complete engine assembly with carburettor, manifold, ignition system and flywheel.</li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTE007 Dismantle and assemble single cylinder four-stroke petrol engines

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle and assemble at least two different single cylinder four-stroke petrol engines.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of safety glasses, ear protection and safety footwear
  - use of engine dismantling and re-assembly equipment
  - collection and disposal of used engine lubricants and coolant
- types of engines and engine operating principles for:
  - four and two-stroke engines
  - single and multi-cylinder configuration
- construction and operating principles of single cylinder four-stroke engine and functions of their major components
- functions of the lubricating system
- components of the lubricating system and their function
- functions of the cooling system
- components of the cooling system and their functions
- types and application of:
  - seals
  - gaskets
  - bearings
- dismantling procedures for engines, including:
  - bolt loosening sequences
  - procedures for noting component positions
- measurement and calculation methods for:
  - piston to bore and connecting rod bearing clearance
  - swept volume
  - clearance volume
  - compression ratio and engine capacity
- reassembly procedures for engines, including:
  - bolt tightening sequences and torque requirements
  - piston ring compression procedures
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines that they have dismantled and assembled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different single cylinder four-stroke petrol engines
- tools and measuring instruments, including lifting equipment.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTE008 Dismantle and assemble multi-cylinder four-stroke petrol engines

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to dismantle and reassemble a multi-cylinder four-stroke engine. It requires the learner to plan and prepare the task; dismantle the engine and inspect the components; reassemble the engine and check the engine operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Engines

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to dismantle and re-assemble a multi-cylinder four-stroke petrol engine	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and engine to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for engine dismantle and assembly are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 <b><i>Tools and equipment</i></b> required for dismantling and assembling multi-cylinder four-stroke petrol engine are identified according to manufacturer specifications</p>
2. Dismantle engine and clean its components	<p>2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 Engine is cleaned according to manufacturer specifications and workplace procedures</p> <p>2.3 <b><i>Engine</i></b> is dismantled without causing damage to components, tools or equipment</p> <p>2.4 Engine components are cleaned and arranged for identification according to workplace procedures</p>
3. Identify, inspect and measure engine components	<p>3.1 Measuring equipment and tools are selected and checked according to manufacturer specifications and workplace safety procedures</p> <p>3.2 Engine and components are measured and results compared against manufacturer specifications</p> <p>3.3 Engine bearing information is sourced and interpreted, and engine bearing type and associated loads are identified</p> <p>3.4 Information on engine seals, sealants and gaskets is sourced and interpreted, and engine seals, sealants and gaskets are identified</p> <p>3.5 Engine component inspection results are recorded</p>
4. Inspect engine cooling system and components and identify type	<p>4.1 Information on the function, type and components of cooling system is sourced and interpreted</p> <p>4.2 Cooling system components are identified and inspected according to manufacturer specifications</p> <p>4.3 Cooling system component inspection results are recorded</p>
5. Re-assemble engine and	5.1 Information on engine seals, sealants and gaskets is sourced and

ELEMENTS	PERFORMANCE CRITERIA
perform operational tests	<p>interpreted</p> <p>5.2 Engine components are prepared for assembly according to manufacturer specifications and safety and environmental requirements</p> <p>5.3 Engine is re-assembled according to manufacturer specifications, and without causing damage to components, tools and equipment</p> <p>5.4 Engine is tested for correct assembly and operation</p> <p>5.5 Engine re-assembly and testing procedures are recorded</p>
6. Complete work processes	<p>6.1 Final inspection is made to ensure work meets task instruction and workplace standards, and engine is presented ready for use or storage according to workplace procedures</p> <p>6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>6.3 Tools and equipment are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary</p> <p>6.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"> <li>locate appropriate sources of vehicle engine information and engine dismantle and reassembly procedures.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely dismantle and assemble a multi-cylinder four-stroke engine</li> <li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li> </ul>
Oral communication skills to:	<ul style="list-style-type: none"> <li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>read and interpret numerical information in engine information</li> <li>use specialist tools and measuring equipment correctly, including verniers, micrometers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)</li> <li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances and ratios.</li> </ul>
Planning and organising skills to:	<ul style="list-style-type: none"> <li>plan own work requirements and prioritise actions to achieve required outcomes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li> </ul>
Problem-solving skills to:	<ul style="list-style-type: none"> <li>identify potential or actual hazards and take action to minimise risk</li> <li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li> </ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including: <ul style="list-style-type: none"> <li>use of safety glasses, ear protection and safety footwear</li> <li>use of engine dismantling and re-assembly equipment</li> <li>collection and disposal of used engine lubricants and coolant.</li> </ul> </li> </ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"> <li>micrometers and other measurement instruments</li> <li>torque wrench.</li> </ul>
<b><i>Engine</i></b> must include one or more of the following:	<ul style="list-style-type: none"> <li>operational multi-cylinder four-stroke petrol engine with: <ul style="list-style-type: none"> <li>2, 4, 6 or 8 cylinder configurations</li> <li>overhead valve with push rods or overhead camshaft</li> </ul> </li> <li>complete multi-cylinder four-stroke engine assembly with carburettor, manifold, ignition system and flywheel.</li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTE008 Dismantle and assemble multi-cylinder four-stroke petrol engines

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle and assemble at least two different multi-cylinder four-stroke petrol engines.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of safety glasses, ear protection and safety footwear
  - use of engine dismantling and re-assembly equipment
  - collection and disposal of used engine lubricants and coolant
- types of engines and engine operating principles for:
  - four and two-stroke engines
  - single and multi-cylinder configuration, including straight, vee and horizontally-opposed engine configurations
- construction and operating principles of multi-cylinder four-stroke engine and functions of their major components
- functions of the lubricating system
- components of the lubricating system and their function, including:
  - sump
  - oil pumps
  - oil filters
  - oil galleries
- functions of the cooling system
- components of the cooling system and their function, including:
  - engine cooling galleries
  - radiators and hoses
  - thermostats
- types and applications of:
  - seals
  - gaskets
  - bearings
- dismantling procedures for engines, including:
  - bolt loosening sequences
  - procedures for noting component positions and order
- measurement and calculation methods for:
  - piston to bore and connecting rod bearing clearance
  - swept volume
  - clearance volume
  - compression ratio and engine capacity
- reassembly procedures for engines, including:
  - bolt tightening sequences and torque requirements
  - piston ring compression procedures
  - procedures for fitting pistons in bores in pairs
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines they have dismantled and re-assembled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different multi-cylinder four-stroke petrol engines
- tools and measuring instruments, including lifting equipment.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTE009 Remove and replace engine cylinder heads

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and replace an engine cylinder head. It requires the learner to plan and prepare the task; remove and dismantle the cylinder head, inspect the components, and reassemble and replace the cylinder head; check the engine operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Engines

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace an engine cylinder head	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and engine assembly to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for engine cylinder head removal and replacement are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 <b><i>Tools and equipment</i></b> required for removing and replacing an engine cylinder head are identified according to manufacturer specifications</p>
2. Remove engine cylinder head	<p>2.1 Tools, equipment and materials are selected and checked according to manufacturer procedures</p> <p>2.2 <b><i>Engine cylinder head</i></b> is removed according to safety and environmental requirements, and without causing damage to components, tools or equipment</p> <p>2.3 Removal procedures are recorded</p>
3. Clean, dismantle and inspect engine cylinder head	<p>3.1 Cleaning methods and materials are selected and checked according to manufacturer specifications and workplace procedures</p> <p>3.2 Engine cylinder head is cleaned according to safety and environmental requirements</p> <p>3.3 <b><i>Engine cylinder head is dismantled</i></b> without causing damage to components, tools or equipment</p> <p>3.4 Engine cylinder head and components are cleaned and arranged for identification</p> <p>3.5 Engine cylinder head and components are measured and results compared against manufacturer specifications</p> <p>3.6 Engine cylinder head and components inspection results are recorded</p>
4. Reassemble and replace engine cylinder head	<p>4.1 Engine cylinder head and components are prepared for assembly according to manufacturer specifications and safety requirements</p> <p>4.2 Engine cylinder head is assembled according to manufacturer specifications and workplace procedures, and without causing damage to components, tools or equipment</p>

ELEMENTS	PERFORMANCE CRITERIA
	<p>4.3 <i>Engine cylinder head is replaced</i> onto engine assembly according to manufacturer specifications and workplace procedures, and without causing damage to components, tools or equipment</p> <p>4.4 Engine is tested for correct assembly and operation</p>
5. Complete work processes	<p>5.1 Final inspection is made to ensure work meets task instruction and workplace standards, and engine is presented ready for use or storage according to workplace procedures</p> <p>5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>5.3 Tools and equipment are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary</p> <p>5.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle engine information and engine cylinder head removal, dismantle, reassembly and replacement procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace engine cylinder head</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information in engine information</li><li>use specialist tools and measuring equipment correctly, including feeler gauges, verniers, micrometers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)</li><li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate length, volume, clearances and ratios.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to remove and replace an engine cylinder head.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including: <ul style="list-style-type: none"> <li>use of safety glasses, ear protection and safety footwear</li> <li>use of engine cylinder head removal, dismantling, reassembly and replacement equipment</li> <li>collection and disposal of used engine lubricants and coolant.</li> </ul> </li> </ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"> <li>automotive hand tools and cylinder head lifting equipment and attachments.</li> </ul>
<b><i>Engine cylinder head</i></b> must include:	<ul style="list-style-type: none"> <li>the cylinder head of a multi-cylinder engine assembly, including all operational fitting attachments.</li> </ul>
<b><i>Engine cylinder head is dismantled</i></b> must include:	<ul style="list-style-type: none"> <li>removing the valve operating mechanisms and valves from the cylinder head.</li> </ul>
<b><i>Engine cylinder head is replaced</i></b> must include	<ul style="list-style-type: none"> <li>correctly torquing cylinder head bolts and associated component retaining bolts</li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTE009 Remove and replace engine cylinder heads

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace at least two different cylinder heads.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of safety glasses, ear protection and safety footwear
  - use of cylinder head removal and replacement equipment
  - collection and disposal of used engine lubricants and coolant
- types of engines and engine operating principles for:
  - four and two-stroke engines
  - single and multi-cylinder configuration
  - petrol and diesel classification
- construction, function and operating principles of major engine components
- component lubricating systems, including:
  - principles and function
  - splash and pressure systems, including system components
- engine cooling systems, including:
  - principles and function
  - air-cooled and water-cooled systems, including system components
- types and application of:
  - seals
  - gaskets
  - bearings
- measurement and calculation methods for:
  - swept volume
  - clearance volume
  - compression ratio and engine capacity
- engine cylinder head removal procedures
- engine cylinder head dismantling procedures
- engine cylinder head inspection procedures, including testing for warping
- engine cylinder reassembly procedures
- engine cylinder head replacement procedures, including methods for torqueing cylinder head to engine
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having removed and replaced engine cylinder heads, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different vehicle or stand-mounted operable engines
- tools and measuring instruments
- cylinder head lifting equipment and attachments.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTJ003 Remove and replace wheel and tyre assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and replace wheel and tyre assemblies. It requires the learner to plan and prepare the task; identify wheel and tyre assemblies; remove wheel and tyre assemblies; inspect components and identify their function; replace the wheel and tyre assembly; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Wheels and Tyres

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace wheel and tyre assemblies	<p>1.1 <b><i>Safety requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and vehicle wheel and tyre assemblies to be worked on are identified</p> <p>1.3 Manufacturer specifications and workplace procedures for removing and replacing wheel and tyre assembly are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 <b><i>Tools and equipment</i></b> required for wheel and tyre assembly removal and replacement are identified according to manufacturer specifications</p>
2. Remove and inspect vehicle wheel and tyre assemblies	<p>2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 <b><i>Vehicle</i></b> is prepared for wheel removal according to workplace procedures and safety requirements</p> <p>2.3 <b><i>Wheel and tyre assemblies</i></b> are removed according to workplace procedures and manufacturer specifications, and without causing damage to components, tools or equipment</p> <p>2.4 Wheel and tyre assemblies are identified and inspected according to manufacturer specifications</p> <p>2.5 Wheel and tyre assembly inspection results are recorded</p>
3. Replace wheel and tyre assemblies	<p>3.1 Wheel and tyre assemblies are prepared for replacement</p> <p>3.2 Wheel and tyre assemblies are replaced according to workplace procedures, manufacturer specifications and safety requirements without causing damage to components, tools or equipment</p> <p>3.3 Wheel and tyre assembly on vehicle is checked for correct operation</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle wheels and tyres are presented ready for use or storage according to workplace procedures</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according</p>

ELEMENTS	PERFORMANCE CRITERIA
	<p>to environmental requirements and workplace procedures</p> <p>4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary</p> <p>4.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of wheel and tyre assembly information and assembly removal and replacement procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace wheel and tyre assemblies</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret metric and imperial systems of measurement</li><li>read and interpret numerical information in wheel and tyre identification codes</li><li>use specialist tools correctly, including pressure gauges, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. kPa for kilopascals)</li><li>use basic mathematical operations, including addition and subtraction, to calculate length.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to remove and replace wheel and tyre assemblies.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of hand tools and lifting and supporting equipment</li><li>• application of procedures for handling wheel and tyre assemblies.</li></ul></li></ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"><li>• automotive hand tools</li><li>• vehicle lifting and supporting equipment, including wheel chocks.</li></ul>
<b><i>Vehicles</i></b> must include one or more of the following:	<ul style="list-style-type: none"><li>• passenger motor vehicle</li><li>• motor cycle</li><li>• constructed vehicle.</li></ul>
<b><i>Wheel and tyre assemblies</i></b> must include:	<ul style="list-style-type: none"><li>• one vehicle fitted with steel wheels</li><li>• one vehicle fitted with alloy wheels.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTJ003 Remove and replace wheel and tyre assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace the wheel and tyre assemblies of at least two different vehicles.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting equipment
  - procedures for handling wheel and tyre assemblies
- types and application of wheel assemblies, including:
  - stamped or pressed steel wheels
  - alloy wheels
  - wheel studs and nuts
  - tyres, including cross-ply and radial tyres
- inspection procedures for tyre and wheel assemblies, including wheel inspection and tyre wear
- removal and replacement procedures and precautions
- tyre air pressure setting and test procedures
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced wheel and tyre assemblies, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- a vehicle fitted with steel wheels
- a vehicle fitted with alloy wheels
- automotive hand tools and lifting equipment.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

# AURTTX012 Dismantle and assemble conventional manual transmissions

## Modification History

Release	Comment
Release 1	New unit of competency

## Application

This unit describes the performance outcomes required to dismantle and reassemble a conventional manual transmission. It requires the learner to plan and prepare the task; dismantle the transmission and inspect the components; reassemble the transmission and check the transmission operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

## Competency Field

Mechanical Miscellaneous

## Unit Sector

Technical - Transmission

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to dismantle and assemble conventional manual transmission	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and transmission to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for conventional manual transmission dismantle and assembly are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 <b><i>Tools and equipment</i></b> required for conventional manual transmission dismantle and reassembly are identified according to manufacturer specifications</p>
2. Dismantle a conventional manual transmission	<p>2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 <b><i>Manual transmission</i></b> is dismantled according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment</p> <p>2.3 Transmission components are cleaned and arranged for identification according to workplace procedures</p>
3. Inspect and identify gears and bearings	<p>3.1 Measuring equipment and tools are selected and checked according to manufacturer specifications and workplace safety procedures</p> <p>3.2 Gears and bearings are inspected and measured, and measurements are compared against manufacturer specifications</p> <p>3.3 Transmission bearing information is sourced and interpreted, and bearing type and associated loads are identified</p> <p>3.4 Gear types are identified and gear ratios calculated and recorded</p>
4. Inspect components and re-assemble transmission	<p>4.1 Transmission seals, sealants and gasket information is sourced and interpreted; and seals, sealants and gaskets are identified</p> <p>4.2 Transmission component's inspection results are recorded</p> <p>4.3 Transmission components are prepared for assembly according to manufacturer specifications and safety and environmental requirements</p> <p>4.4 Transmission is assembled according to manufacturer specifications and requirements</p>

ELEMENTS	PERFORMANCE CRITERIA
5. Complete work processes	<p>5.1 Final inspection is made to ensure work meets task instruction and workplace standards, and conventional manual transmission is presented ready for use or storage according to workplace procedures</p> <p>5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>5.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary</p> <p>5.4 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"> <li>locate appropriate sources of vehicle transmission information and transmission dismantle and reassembly procedures.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely dismantle and assemble a conventional manual transmission</li> <li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li> </ul>
Oral communication skills to:	<ul style="list-style-type: none"> <li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>read and interpret numerical information in transmission information</li> <li>use specialist tools and measuring equipment correctly, including verniers, micrometers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)</li> <li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances and ratios.</li> </ul>
Planning and organising skills to:	<ul style="list-style-type: none"> <li>plan own work requirements and prioritise actions to achieve required outcomes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li> </ul>
Problem-solving skills to:	<ul style="list-style-type: none"> <li>identify potential or actual hazards and take action to minimise risk</li> <li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>set up and operate equipment and tools required to dismantle and assemble a conventional manual transmission.</li> </ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"><li>• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• applying procedures for disposing of used oil, lubricants and coolants.</li></ul></li></ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"><li>• micrometers and other measurement instruments</li><li>• torque wrench.</li></ul>
<b><i>Manual transmission</i></b> must include:	<ul style="list-style-type: none"><li>• a complete conventional manual transmission, with at least four gears.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTX012 Dismantle and assemble conventional manual transmissions

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle and re-assemble a minimum of two different conventional manual transmissions.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - procedures for disposing of used oil and lubricants
- types of manual transmissions, including:
  - conventional
  - transaxle
- transmission operating principles, including:
  - types of gears
  - gear ratios
  - transmission bearings, seals and gaskets
  - transmission oils
- construction and operation of transmissions, including:
  - power flows
  - gear selector mechanisms and interlocks
  - synchromesh units
- transmission dismantling procedures
- transmission inspection procedures
- transmission reassembly procedures
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to dismantling and re-assembling a conventional manual transmission e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different conventional manual transmissions with at least four gears
- tools and special equipment, including lifting equipment.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURTTX013 Remove and replace clutch assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to remove and replace the clutch assembly of a vehicle. It requires the learner to plan and prepare the task; remove the clutch assembly and inspect it and its associated components; replace the clutch assembly and check the clutch operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Mechanical Miscellaneous

### Unit Sector

Technical - Transmission

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace clutch assembly	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and clutch assembly to be worked on is identified</p> <p>1.3 Manufacturer specifications and workplace procedures for clutch assembly removal and replacement are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.5 Tools and equipment required for removing and replacing clutch assembly are identified according to manufacturer specifications</p>
2. Remove clutch assembly	<p>2.1 <b><i>Tools, equipment and materials</i></b> are selected and checked prior to use according to manufacturer specifications and safety requirements</p> <p>2.2 <b><i>Clutch assembly</i></b> is removed according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment</p> <p>2.3 Clutch components are identified and inspected according to manufacturer specifications</p> <p>2.4 Clutch assembly component inspection results are recorded</p>
3. Replace clutch assembly	<p>3.1 Clutch assembly components are prepared for assembly</p> <p>3.2 Clutch is replaced according to safety and environmental requirements, workplace procedures and manufacturer specifications, and without causing damage to components, tools or equipment</p> <p>3.3 Clutch assembly finger height is measured and compared to manufacturer specifications</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and clutch assembly is presented ready for use or storage according to workplace procedures</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary</p> <p>4.4 Workplace documentation is processed according to workplace</p>

ELEMENTS	PERFORMANCE CRITERIA
	procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>locate appropriate sources of vehicle clutch assembly information and clutch assembly removal and replacement procedures.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace clutch assemblies</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>read and interpret numerical information in clutch system information</li><li>use specialist tools and measuring equipment correctly, including verniers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)</li><li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate length and clearances.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to achieve required outcomes.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to remove and replace a clutch assembly.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"><li>• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:<ul style="list-style-type: none"><li>• use of personal protective equipment, including safety glasses, ear protection and safety footwear</li><li>• use of hand tools and lifting equipment</li><li>• application of procedures for handling used transmission fluid and asbestos-based products, including brake dust.</li></ul></li></ul>
<b><i>Tools, equipment and materials</i></b> must include:	<ul style="list-style-type: none"><li>• automotive hand tools</li><li>• transmission lifting equipment</li><li>• clutch aligning tool</li><li>• cleaning agents.</li></ul>
<b><i>Clutch assembly</i></b> must include:	<ul style="list-style-type: none"><li>• the complete clutch assembly from one of the following:<ul style="list-style-type: none"><li>• passenger or light commercial motor vehicle</li><li>• heavy vehicle</li><li>• motorcycle</li><li>• constructed vehicle.</li></ul></li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURTTX013 Remove and replace clutch assemblies

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace a clutch assembly from an operating vehicle with a manual transmission.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting equipment
  - safety data sheets (SDS) and procedures for handling and disposing of waste brake fluid, lubricants and asbestos-based products, including brake dust
- clutch assembly types, application and basic operation, including:
  - diaphragm clutch
  - coil spring clutch
- clutch assembly removal procedures
- clutch assembly and associated component inspection procedures
- clutch assembly replacement procedures, including:
  - clutch aligning
  - clutch finger height measurement
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the clutch assemblies that they have removed and replaced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- an appropriate vehicle fitted with a manual transmission and clutch assembly
- automotive hand tools
- transmission lifting machine
- clutch aligning tool
- cleaning agents.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURVNA003 Review vehicle repair quotations

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to review a vehicle repair quotation. It involves reviewing cost and time requirements in the repairer's quote to ensure that they accurately represent the repair method to reinstate the vehicle to pre-damage condition, and to determine that the repair cost is fair and reasonable. It also involves ensuring that quotation figures are accurate and completing the required documentation.

The unit applies to those reviewing a body repair shop quotation to repair a damaged vehicle in the loss assessment environment. Vehicles to be repaired may include light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Vehicle Body

### Unit Sector

Loss Assessment and Repair Quoting

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for work	1.1 <b><i>Quotation</i></b> and workplace policies and procedures are located 1.2 Quotation information and supporting documents are collected
2. Review time requirements	2.1 Viable repair time requirements are estimated 2.2 Turn-around time for subcontracted specialist services is estimated 2.3 Total time for <b><i>repair work</i></b> is estimated 2.4 Time requirement estimations are documented
3. Review part requirements	3.1 Viability of replacement parts compared to repair is determined while meeting quality standards, <b><i>legal requirements</i></b> , <b><i>safety requirements</i></b> , and workplace practices 3.2 Relevance of identified parts for the repair is checked 3.3 Potential variations to the original parts costing is determined 3.4 Cost of parts and consumables is estimated using industry and workplace pricing standards 3.5 Findings relating to parts are documented
4. Review subcontract specialist services work	4.1 Nature and scope of subcontract testing, service and repair work are determined 4.2 Completed subcontracted repair work is checked 4.3 Potential variations to subcontract work costing are identified 4.4 Cost of subcontract testing, service and repair work is estimated using industry and workplace pricing standards 4.5 Subcontract testing, parts, service and repair work requirements are documented
5. Agree on quotation with repairer	5.1 Time requirements and costs are negotiated and agreed with repairer in a fair and transparent manner 5.2 Quotation adjustments are made if required 5.3 Quotation is agreed and finalised 5.4 Authorisation to proceed with the repair is provided as required to reinstate the vehicle to pre-damage condition following workplace policies and procedures
6. Finalise quotation review	6.1 Findings are documented using workplace-approved quotation format 6.2 Findings and repair authorisation documentation are reported to appropriate persons as required by workplace policies and

ELEMENTS	PERFORMANCE CRITERIA
	procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>review a vehicle repair quotation to:<ul style="list-style-type: none"><li>interpret technical information</li><li>research information</li><li>understand common industry terminology</li><li>understand manufacturer and component specifications.</li></ul></li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>discuss and finalise quotation with repairer</li><li>discuss quotation with supervisor, subcontractors and customers</li><li>report work outcomes and problems.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>estimate costs, time requirements and subcontract work.</li></ul>
Digital literacy skills to:	<ul style="list-style-type: none"><li>access repair and time data</li><li>document and review quotation results.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify technical and procedural problems</li><li>prevent time and material wastage problems.</li></ul>
Teamwork skills to:	<ul style="list-style-type: none"><li>work effectively and cooperatively with others to optimise workflow and productivity.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Quotations</i></b> must include:	<ul style="list-style-type: none"> <li>• customer details</li> <li>• labour cost estimates</li> <li>• replacement parts required and their cost</li> <li>• subcontracted or specialist work</li> <li>• vehicle details</li> <li>• work to be performed.</li> </ul>
<b><i>Repair work</i></b> must include:	<ul style="list-style-type: none"> <li>• all vehicle damage, including minor and extensive damage.</li> </ul>
<b><i>Legal requirements</i></b> are to be in accordance with applicable commonwealth, state, or territory legislation, regulations, certification requirements and codes of practice, and must include:	<ul style="list-style-type: none"> <li>• environmental regulations</li> <li>• intellectual property.</li> </ul>
<b><i>Safety requirements</i></b> are to be in accordance with applicable commonwealth, state or territory Workplace Health and Safety Act or Occupational Health and Safety Act and must include:	<ul style="list-style-type: none"> <li>• ensuring safe location of vehicle to be inspected</li> <li>• following workplace safety procedures</li> <li>• identifying potential safety hazards.</li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURVNA003 Review vehicle repair quotations

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- review a minimum of two vehicle repair quotations for vehicle repair jobs, one relating to minor damage, the other to extensive damage.
- for each quotation:
  - agreeing on a final quotation with repairer
  - completing a vehicle assessment report.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- motor vehicle mechanical, electrical, paint, panel and structural:
  - extensive damage, which is damage that affects the safety and roadworthiness of a vehicle and includes:
    - body panel damage
    - bolt-on vehicle component damage
    - mechanical component damage
    - structural component damage
    - structural damage
    - welded or bonded key structural components, such as chassis rails damage
  - faults
  - dismantling and repair methods
  - minor damage, which is damage that does not affect the safety and roadworthiness of a vehicle and includes:
    - bumper bar graze
    - hail damage
    - panel damage
- types of specialist services, including:
  - air conditioning
  - automotive glaziers
  - battery electric vehicle (BEV)
  - brake systems
  - cooling systems
  - electrical and electronic systems
  - hybrids
  - liquid petroleum gas (LPG)
  - suspension and wheel alignments
  - transmission
  - trimming
- basic principles of estimating and costing
- methods for sourcing current retail costs of vehicles and vehicle components and materials
- current assessing and quoting methodologies
- relevant automotive websites to locate information on current best practice and future trends in the vehicle loss assessment environment
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory fair Trading Act
- applicable commonwealth, state or territory laws, regulations and standards relating to reviewing a vehicle repair quotation, including:
  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property

- personal legal liability
- applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to reviewing a vehicle repair quotation, including:
  - recording and reporting procedures
  - use of digital images.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicle repair quotes that they have reviewed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of motor vehicles with both minor and extensive damage
- relevant information:
  - original equipment manufacturer (OEM)
  - recognised agency information
  - design specification
  - repair procedures
  - body repair manuals
- relevant materials, resources and safety equipment, including digital camera, paperwork and personal protective equipment kit
- relevant safety materials, including workplace safety procedures
- vehicle assessment information, including assessment notification, digital images and quotes
- Repair Times manuals.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURVNA005 Inspect quality of vehicle repair work

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to inspect vehicle repair work to ensure that it is being undertaken as agreed by the insurer and repairer.

The unit applies to those involved in inspecting the technical quality of repair work in the vehicle loss assessment environment, at the request of either the customer or the repairer. Repair work may be to light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Vehicle Body

### Unit Sector

Loss Assessment and Repair Quoting

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for vehicle inspection	1.1 Vehicle information is accessed and reviewed 1.2 Vehicle to be inspected is identified and checked against vehicle information 1.3 Appropriate <b><i>vehicle inspection method</i></b> is determined 1.4 Materials and equipment required to conduct vehicle inspection are identified and prepared
2. Inspect vehicle	2.1 Original equipment manufacturer (OEM) or authorised agencies and <b><i>component specifications</i></b> are interpreted and applied 2.2 Vehicle is inspected to determine that repair has been undertaken to an acceptable industry standard in line with compliance requirements 2.3 Safety and workplace procedures are interpreted and complied with 2.4 Vehicle inspection personal protective equipment (PPE) is used 2.5 Repair faults are identified 2.6 Faults requiring <b><i>rectification action</i></b> are decided and repair work plan is prepared
3. Authorise further action	3.1 Repair faults and recommended repair methods are discussed with current or new repairer 3.2 Cost and quotation variations are agreed with current or new repairer 3.3 Corrective work process is authorised with current or new repairer
4. Complete work processes	4.1 Actions undertaken are documented as required under the relevant code of practice 4.2 Vehicle inspection report is completed and provided to appropriate person 4.3 Reports are processed as required by workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>• identify workplace procedures relating to inspecting repair quality.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>• interpret OEM or authorised agencies' repair procedures</li><li>• interpret vehicle technical information and specifications, including vehicle inspection reports.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>• communicate with customers, repairers and insurance organisations</li><li>• confirm inspection requirements</li><li>• question and listen to others regarding repair work</li><li>• reach agreement on cost and quotation variations.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>• interpret vehicle specifications</li><li>• interpret pre- and post-repair measurements</li><li>• identify OEM or authorised agencies' recommended repair measurements</li><li>• identify cost variations.</li></ul>
Digital literacy skills to:	<ul style="list-style-type: none"><li>• interpret vehicle repair and diagnostic data</li><li>• use communication devices and computerised equipment to document and report results.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>• coordinate communication between customer, repairers and insurance organisation.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>• use electronic devices to inspect the quality of mechanical, body and paint repair work</li><li>• use electronic vehicle repair measuring systems.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Vehicle inspection method</i></b> must include at least one of the following:	<ul style="list-style-type: none"><li>• physically checking and inspecting damage to vehicle and components</li><li>• referring to reports, publications and OEM or authorised agencies' specifications</li><li>• using digital images of damage to vehicle and components.</li></ul>
<b><i>Component specifications</i></b> must include at least one of the following:	<ul style="list-style-type: none"><li>• vehicle design specifications and drawings</li><li>• repair instructions and procedures</li><li>• component replacement instructions and procedures.</li></ul>
<b><i>Rectification action</i></b> must include one or more of the following:	<ul style="list-style-type: none"><li>• repairing the vehicle at the original repairer</li><li>• repairing the vehicle at a new repairer and seeking recovery from the original repairer</li><li>• declaring the vehicle a total loss and disposing of the vehicle at auction</li><li>• declaring the vehicle a total loss and selling vehicle in its present condition back to the original repairer.</li></ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURVNA005 Inspect quality of vehicle repair work

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect vehicle repair work on a minimum of two occasions, where:
  - one repair involves rectification action undertaken at the original repairer
  - the other repair involves rectification action undertaken at a new repairer.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- type and use of personal protection equipment (PPE) required when inspecting repair work
- types of rectification action and process, including:
  - repairing the vehicle at original repairer
  - repairing the vehicle at a new repairer and seeking recovery from the original repairer
  - declaring the vehicle a total loss and disposing of the vehicle at auction
  - declaring the vehicle a total loss and selling the vehicle in its present condition back to the original repairer
- motor vehicle mechanical, electrical, paint, panel and structural repairs, including:
  - damage and faults
  - dismantling and repair methods
- current assessing and quoting methodologies
- vehicle inspection and damage assessment procedures and methodologies, including repair set-up and dismantling procedures
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory Fair Trading Act
- methods for sourcing original equipment manufacturer (OEM) or authorised agencies' repair procedures and component supplier specifications, workshop manuals and repair guides
- applicable commonwealth, state or territory laws, regulations and standards relating to inspecting quality of vehicle repair work, including:
  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property
  - personal legal liability
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace procedures relating to inspecting the quality of vehicle repair work, including:
  - recording and reporting procedures
  - use of digital images.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have inspected, e.g. reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace location or simulated workplace
- a range of vehicles with both satisfactory and unsatisfactory repair work
- relevant materials, resources and safety equipment, including digital camera, paperwork and PPE kit
- relevant information, including OEM or authorised agencies' repair specifications, workshop manuals and repair guides
- vehicle details.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## **AURVNA007 Apply automotive mechanical and electrical knowledge to vehicle loss assessments**

### **Modification History**

<b>Release</b>	<b>Comment</b>
Release 1	New unit of competency

### **Application**

This unit describes the performance outcomes required to apply automotive mechanical and electrical knowledge to identify mechanical and electrical damage resulting from a vehicular accident.

It applies to those applying specialist automotive knowledge to a vehicle loss assessment in the loss assessment environment. Loss assessment may relate to light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### **Competency Field**

Vehicle Body

### **Unit Sector**

Loss Assessment and Repair Quoting

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Develop and apply an understanding of automotive mechanical knowledge	<p>1.1 Knowledge of the operating principles of <i>suspension and steering systems, brake systems, transmission and driveline assembly</i>, and <i>engine and fuel systems</i> is developed</p> <p>1.2 Knowledge of suspension and steering systems, brake systems, transmission and driveline assembly, and engine and fuel systems is applied to loss assessment processes, procedures and policies</p> <p>1.3 Mechanical damage is identified</p>
2. Develop and apply an understanding of automotive electrical knowledge	<p>2.1 Knowledge of the operating principles of <i>electrical and electronic systems</i> is developed</p> <p>2.2 Knowledge of electrical and electronic systems is applied to loss assessment processes, procedures and policies</p> <p>2.3 Electrical damage is identified</p>
3. Develop and apply an understanding of advanced specialist vehicle knowledge	<p>3.1 Knowledge of specific vehicle types is developed, clarified where necessary, and applied to loss assessment processes, procedures and policies</p> <p>3.2 Knowledge of <i>latest technology</i> relating to automotive mechanical and electrical systems is developed, clarified where necessary, and applied to loss assessment processes, procedures and policies</p> <p>3.3 <i>Research techniques</i> and advanced specialist knowledge are employed to identify vehicle damage</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>• apply loss assessment processes, procedures and policies</li><li>• research, interpret and apply automotive mechanical, electrical and advanced specialist vehicle knowledge.</li></ul>
Oral Communication skills to:	<ul style="list-style-type: none"><li>• engage with repairers and specialist providers.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>• interpret technical measurements.</li></ul>
Digital Literacy skills to:	<ul style="list-style-type: none"><li>• use communication devices and computerised equipment to research advanced specialist vehicle information.</li></ul>
Problem Solving skills to:	<ul style="list-style-type: none"><li>• clarify problems relating to:<ul style="list-style-type: none"><li>• brake systems</li><li>• engine and fuel systems</li><li>• electrical and electronic systems</li><li>• latest automotive technology</li><li>• specific vehicle types</li><li>• suspension and steering systems</li><li>• transmission and driveline assembly</li></ul></li><li>• clarify knowledge of specific vehicle types and latest technology relating to automotive mechanical and electrical problems.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Suspension and steering systems</i></b> must include at least two of the following:	<ul style="list-style-type: none"> <li>• dependant suspension</li> <li>• double wishbone suspension</li> <li>• independent suspension</li> <li>• McPherson strut suspension.</li> </ul>
<b><i>Brake systems</i></b> must include at least two of the following:	<ul style="list-style-type: none"> <li>• air braking system</li> <li>• anti-lock braking system (ABS)</li> <li>• autonomous braking system</li> <li>• hydraulic braking system</li> <li>• stability control.</li> </ul>
<b><i>Transmission and driveline assembly</i></b> must include:	<ul style="list-style-type: none"> <li>• automatic and manual transmission</li> <li>• clutch assembly</li> <li>• driveline</li> <li>• final drive assembly.</li> </ul>
<b><i>Engine and fuel systems</i></b> must include:	<ul style="list-style-type: none"> <li>• cooling system</li> <li>• emission control system</li> <li>• engine components</li> <li>• fuel system.</li> </ul>
<b><i>Electrical and electronic systems</i></b> must include:	<ul style="list-style-type: none"> <li>• batteries</li> <li>• charging systems</li> <li>• electrical circuits</li> <li>• electronic body management systems</li> <li>• electronic drive management systems</li> <li>• electronic spark ignition engine management system</li> <li>• ignition systems</li> <li>• lights</li> <li>• starting systems</li> <li>• vehicle sensors.</li> </ul>
<b><i>Latest technology</i></b> must include:	<ul style="list-style-type: none"> <li>• battery electric vehicle</li> <li>• hybrid vehicle.</li> </ul>
<b><i>Research techniques</i></b> must include:	<ul style="list-style-type: none"> <li>• internet</li> <li>• reference material, including: <ul style="list-style-type: none"> <li>• original equipment manufacturer (OEM) or authorised agencies repair guides</li> <li>• repair guides</li> <li>• workshop manuals</li> </ul> </li> </ul>

	<ul style="list-style-type: none"><li>• subject matter experts.</li></ul>
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## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURVNA007 Apply automotive mechanical and electrical knowledge to vehicle loss assessments

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- apply automotive mechanical and electrical knowledge to vehicle loss assessment processes, procedures and policies
- apply latest automotive technology knowledge and knowledge of specific vehicle types to vehicle loss assessment processes, procedures and policies
- identify vehicle mechanical and electrical damage.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- motor vehicle:
  - mechanical systems and components:
    - damage and faults
    - dismantling and repair methods
  - operating principles of electrical and electronic systems and components, including:
    - damage and faults
    - dismantling and repair methods
  - operating principles of mechanical systems and components, including:
    - brake systems
    - engine and fuel systems
    - suspension and steering systems
    - transmission and driveline assembly
- technical knowledge relating to a specific vehicle type, including light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles
- technical knowledge of latest technology relating to mechanical, electrical and electronic motor vehicle repair, including repair of battery electric vehicles (BEV) and hybrid vehicles
- vehicle inspection and damage assessment procedures and methodologies, including repair set-ups and dismantling procedures
- current assessing and quoting methodologies
- relevant automotive websites to locate current best practice and future trends information
- methods of sourcing OEM or authorised agencies repair procedures, component supplier specifications and repair guides
- applicable commonwealth, state or territory laws, regulations and standards relating to vehicle loss assessment and reporting requirements, including:
  - environmental regulations
  - intellectual property
  - legislation
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to vehicle loss assessment and reporting requirements, including:
  - recording and reporting procedures
  - use of digital images.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of vehicles with mechanical and electrical damage
- relevant information including OEM or authorised agencies repair procedures, component supplier specifications and repair guides
- relevant materials and resources.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURVNA008 Apply automotive body and paint knowledge to vehicle loss assessments

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to apply automotive body and paintwork knowledge to identify body and paint damage.

The unit applies to those applying specialist body and paint knowledge to a vehicle loss assessment in the loss assessment environment. Vehicles and components may include light vehicles, commercial vehicle, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Vehicle Body

### Unit Sector

Loss Assessment and Repair Quoting

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Develop and apply an understanding of automotive paintwork knowledge	<p>1.1 Knowledge of operating principles of <b><i>paint preparation, application</i></b>, and refinishing process and techniques, including <b><i>paint products</i></b> and imperfection identification is developed</p> <p>1.2 Knowledge of paint preparation and paint product is applied to loss assessment processes</p> <p>1.3 Paintwork damage is identified using <b><i>colour matching techniques</i></b></p>
2. Develop and apply an understanding of automotive body knowledge	<p>2.1 Knowledge of operating principles of <b><i>vehicle structure</i></b> is developed</p> <p>2.2 knowledge of operating principles of vehicle <b><i>supplementary restraint systems</i></b> (SRS) is developed</p> <p>2.3 Knowledge of operating principles of <b><i>vehicle body repair procedures</i></b> is developed</p> <p>2.4 Knowledge of vehicle structure, SRS and body repair procedures is applied to loss assessment processes, procedures and policies</p> <p>2.5 Bodywork damage is identified</p>
3. Develop and apply an understanding of advanced specialist vehicle information	<p>3.1 Knowledge of <b><i>specific vehicle types</i></b> is developed, clarified where necessary, and applied to loss assessment processes, procedures and policies</p> <p>3.2 Knowledge of <b><i>latest technology</i></b> relating to automotive paint and bodywork is developed, clarified where necessary, and applied to loss assessment processes, procedures and policies</p> <p>3.3 <b><i>Research techniques</i></b> and advanced specialist vehicle knowledge are employed in order to identify vehicle damage</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"><li>source information on loss assessment processes, procedures and policies.</li></ul>
Reading skills to:	<ul style="list-style-type: none"><li>research and interpret automotive paintwork, body, and advanced specialist vehicle information.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>discuss with repairers and specialist providers problems relating to:<ul style="list-style-type: none"><li>latest automotive technology</li><li>specific vehicle types</li><li>vehicle body</li><li>vehicle paintwork.</li></ul></li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>interpret technical measurements in order to determine extent of damage.</li></ul>
Digital literacy skills to:	<ul style="list-style-type: none"><li>use communication devices and computerised equipment to research advanced specialist vehicle information.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Paint preparation and application</i></b> must include:	<ul style="list-style-type: none"> <li>• colour matching</li> <li>• paint film thickness gauge</li> <li>• paint code list</li> <li>• paint mixing</li> <li>• masking</li> <li>• surface preparation, including:               <ul style="list-style-type: none"> <li>• sanding</li> <li>• degreasing.</li> </ul> </li> </ul>
<b><i>Paint products</i></b> must include:	<ul style="list-style-type: none"> <li>• acrylic enamel</li> <li>• air dry enamel</li> <li>• clear over base (COB)</li> <li>• multi-layer</li> <li>• pearls</li> <li>• polyurethane</li> <li>• primers and fillers</li> <li>• special effects</li> <li>• two-pack paint</li> <li>• waterborne paint.</li> </ul>
<b><i>Colour matching techniques</i></b> must include at least one of the following:	<ul style="list-style-type: none"> <li>• eye</li> <li>• formula</li> <li>• colour cards</li> <li>• colour spectrometer.</li> </ul>
<b><i>Vehicle structure</i></b> must include:	<ul style="list-style-type: none"> <li>• alloys</li> <li>• collision energy management</li> <li>• composite materials</li> <li>• foams structural and non-structural</li> <li>• glass components</li> <li>• metals</li> <li>• plastics</li> <li>• vehicle structural integrity and component interrelationship.</li> </ul>
<b><i>Supplementary restraint systems</i></b> must include:	<ul style="list-style-type: none"> <li>• airbag systems, including:               <ul style="list-style-type: none"> <li>• console</li> <li>• curtain</li> <li>• dash</li> <li>• knee</li> <li>• pillar</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• seat</li> <li>• side</li> <li>• steering wheel</li> <li>• seat belt tensioners</li> <li>• sensors, actuators and control modules.</li> </ul>
<b>Vehicle body repair procedures</b> must include:	<ul style="list-style-type: none"> <li>• alignment systems</li> <li>• panel repair, including the application of filler</li> <li>• measuring systems</li> <li>• methods and types of: <ul style="list-style-type: none"> <li>• bonding</li> <li>• fastening</li> <li>• riveting</li> <li>• welding.</li> </ul> </li> </ul>
<b>Specific vehicle types</b> must include at least one of the following:	<ul style="list-style-type: none"> <li>• agricultural and plant equipment</li> <li>• heavy vehicles</li> <li>• commercial vehicles</li> <li>• light vehicles</li> <li>• motorcycles</li> <li>• recreational vehicles.</li> </ul>
<b>Latest technology</b> must include:	<ul style="list-style-type: none"> <li>• alloy steel technology</li> <li>• aluminium technology</li> <li>• composite materials</li> <li>• electrical and electronic systems</li> <li>• high strength steels</li> <li>• painting preparation and procedures.</li> </ul>
<b>Research techniques</b> must include:	<ul style="list-style-type: none"> <li>• internet</li> <li>• reference material, including: <ul style="list-style-type: none"> <li>• original equipment manufacturer (OEM) or authorised agency repair guides</li> <li>• paint code list</li> <li>• repair guides</li> </ul> </li> <li>• subject matter experts.</li> </ul>

## Unit Mapping Information

No equivalent unit.

## **Links**

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURVNA008 Apply automotive body and paint knowledge to vehicle loss assessments

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- apply specialist automotive knowledge to vehicle loss assessment processes and procedures on a minimum of two occasions, including:
  - automotive paintwork and body knowledge
  - latest automotive technology knowledge
  - specific vehicle type knowledge
  - identification of vehicle body and paint damage.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- operating principles of paint preparation and refinishing process and techniques, including:
  - colour matching
  - imperfection identification
  - paint products
- operating principles of supplementary restraint systems (SRS)
- operating principles of vehicle structural repair and procedures, including:
  - measuring and alignment systems
  - welding, bonding and fastening methods and types
- operating principles of vehicle structure, including:
  - alloys
  - metals
  - other materials
- paintwork and body:
  - damage and faults
  - dismantling and repair methods
  - technical knowledge relating to a specific vehicle type
- technical knowledge of latest technology relating to vehicle paintwork and body repair, including:
  - composite materials
  - high-strength steels
  - waterborne paints
  - painting preparation and procedures
  - SRS
- vehicle inspection and damage assessment procedures and methodologies, including repair set-up and dismantling procedures
- current assessing and quoting methodologies
- relevant automotive websites to locate information on current best practice and future trends in vehicle loss assessment
- methods for sourcing original equipment manufacturer (OEM) or authorised agencies' repair procedures, component supplier specifications and repair guides
- applicable commonwealth, state or territory laws, regulations and standards relating to vehicle loss assessment and reporting requirements, including:
  - environmental regulations
  - intellectual property
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to vehicle loss assessment and reporting requirements, including:
  - recording and reporting procedures
  - use of digital images.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of vehicles with paint and body damage
- relevant information, including OEM or authorised agencies' repair procedures, component supplier specifications and repair guides
- relevant materials and resources.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURVNN001 Evaluate vehicle bodywork for damage and identify repair requirements

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to evaluate the bodywork of a vehicle for damage and to identify the materials, equipment and processes required to repair it. It involves using vehicle paint, body and mechanical technical knowledge; and locating, evaluating and documenting relevant information when selecting materials, equipment and processes.

The unit applies to those evaluating the bodywork of a vehicle for damage and selecting materials, equipment and processes to repair the vehicle in a vehicle repair or vehicle loss assessment environment. Vehicles may include light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Vehicle Body

### Unit Sector

Loss Assessment and Repair Quoting - Body

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for work	1.1 Work instructions are used to determine job requirements 1.2 Workplace and workplace <b><i>safety requirements</i></b> are read and complied with 1.3 <b><i>Workplace policies and procedures, legal requirements, and component supplier specifications</i></b> are read and interpreted 1.4 Safety equipment, tooling equipment, and <b><i>materials and equipment</i></b> are selected and checked
2. Assess vehicle bodywork for damage	2.1 Vehicle to be inspected is located 2.2 Preferred dismantling and inspection methods are determined that conform to workplace policies and procedures, legal requirements, and vehicle manufacturer and component supplier specifications 2.3 Vehicle system and components are dismantled and inspected to determine <b><i>vehicle damage</i></b> and faults 2.4 Vehicle is inspected in line with workplace policies and procedures, legal requirements, vehicle manufacturer and component supplier specifications, safety requirements and workplace environmental practices 2.5 Suitability of vehicle for insurance is determined according to workplace policies and procedures
3. Gather data and specifications	3.1 Bodywork process specifications are identified and documented 3.2 Staff and management are consulted to identify additional or altered specifications 3.3 Existing materials and equipment are evaluated 3.4 Data and specifications are compiled and documented
4. Evaluate and select materials, equipment and processes	4.1 Materials and equipment options are determined 4.2 Materials and equipment are assessed for quality finish and conformity to standards 4.3 Specifications of materials and equipment are compared for performance and cost 4.4 Commercial, environmental and safety impact of materials and equipment selection are determined 4.5 Materials, equipment and processes are selected based on performance, cost, specifications and impact comparison 4.6 Evaluation process is documented as required by organisational policies and procedures, and legal requirements

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>• interpret technical specifications</li><li>• analyse information relating to bodywork materials and equipment</li><li>• analyse regulatory, environmental and safety procedures, best practice and future trends</li><li>• research evaluation results.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>• consult with staff and management to inform research and data gathering.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>• organise activities</li><li>• systematically identify, research and evaluate options.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>• identify potential technical and procedural problems and variables.</li></ul>
Teamwork skills to:	<ul style="list-style-type: none"><li>• work effectively and cooperatively with others in identifying specifications that contribute to evaluation of vehicle repair requirements.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety requirements</i></b> are to be in accordance with applicable commonwealth, state or territory Workplace Health and Safety Act or Occupational Health and Safety Act and must include:	<ul style="list-style-type: none"> <li>ensuring safe location of vehicle to be inspected</li> <li>following workplace safety procedures</li> <li>identifying potential safety hazards.</li> </ul>
<b><i>Workplace policies and procedures</i></b> must include:	<ul style="list-style-type: none"> <li>environment and sustainability</li> <li>job specifications</li> <li>manufacturer specifications and industry codes of practice</li> <li>quality policies and procedures, including Australian standards</li> <li>reporting and recording procedures</li> <li>safe work procedures.</li> </ul>
<b><i>Legal requirements</i></b> are to be in accordance with applicable commonwealth, state, or territory legislation, regulations, certification requirements and codes of practice, and must include:	<ul style="list-style-type: none"> <li>environmental regulations</li> <li>intellectual property.</li> </ul>
<b><i>Component supplier specifications</i></b> must include at least one of the following:	<ul style="list-style-type: none"> <li>vehicle design specifications and drawings</li> <li>repair instructions and procedures</li> <li>component replacement instructions and procedures.</li> </ul>
<b><i>Materials and equipment</i></b> must include:	<ul style="list-style-type: none"> <li>digital camera</li> <li>electronic or paper-based information and reports</li> <li>elcometer</li> <li>hoist</li> <li>internet connection</li> <li>maps</li> <li>personal computer, laptop or tablet</li> <li>personal protective equipment (PPE) kit</li> <li>portable light</li> <li>protective covers.</li> </ul>

<b>Vehicle damage</b> must include:	<ul style="list-style-type: none"><li>• all vehicle damage, including minor and extensive damage.</li></ul>
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## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURVNN001 Evaluate vehicle bodywork for damage and identify repair requirements

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- evaluate the damage on bodywork of a minimum of two vehicles and identify repair requirements, with at least one evaluation relating to minor damage and the other relating to extensive damage
- for each evaluation:
  - determine the impact of decisions in terms of commercial and safety risks
  - document bodywork materials, equipment and processes.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- motor vehicle mechanical, electrical, paint, panel and structural:
  - extensive damage, which is damage that affects the safety and roadworthiness of a vehicle and includes:
    - body panel damage
    - bolt-on vehicle component damage
    - mechanical component damage
    - structural component damage
    - structural damage
    - welded or bonded key structural components, such as chassis rails damage
  - faults
  - dismantling and repair methods
  - minor damage, which is damage that does not affect the safety and roadworthiness of a vehicle and includes:
    - bumper bar graze
    - hail damage
    - panel damage
- methods for sourcing current retail costs of vehicles and vehicle components and materials
- vehicle inspection and damage assessment procedures and methodologies, including repair set-up and dismantling procedures
- current assessing and quoting methodologies
- vehicle testing machines and procedures
- current vehicle materials and retail costs
- relevant automotive websites to locate information on current best practice and future trends in the vehicle loss assessment environment
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - intellectual property
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory Fair Trading Act
- methods for sourcing original equipment manufacturer (OEM) or recognised agency information, component supplier specifications, workshop manuals and repair guides
- applicable commonwealth, state or territory laws, regulations and standards relating to evaluating vehicle damage, and suggesting repair materials, equipment and processes, including:
  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property
  - personal legal liability
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to evaluating vehicle damage, and suggesting repair materials, equipment and processes, including:
  - recording and reporting procedures

- use of digital images.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of vehicles with both minor and extensive vehicle damage
- computer hardware, software and calculators
- internet access
- necessary tools and equipment
- relevant information, including OEM or recognised agency information and repair procedures, workshop and body repair manuals
- workplace technology.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURVNP001 Evaluate vehicle paintwork for damage and identify refinish requirements

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to evaluate vehicle paintwork for damage and identify the paint refinish required to repair a vehicle. It involves using technical understanding of paint applications and procedures; and locating, evaluating and documenting relevant information.

The unit applies to those evaluating the paintwork on a vehicle for damage and identifying appropriate paint refinish to repair the vehicle in a vehicle repair or vehicle loss assessment environment. Vehicles may include light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

### Competency Field

Vehicle Body

### Unit Sector

Loss Assessment and Repair Quoting - Paint

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for work	<p>1.1 Work instructions are used to determine job requirements</p> <p>1.2 Workplace <i>safety requirements</i> and <i>workplace environmental practices</i> and policies are read and complied with</p> <p>1.3 <i>Workplace policies and procedures, legal requirements</i>, and <i>component supplier specifications</i> are read and interpreted</p> <p>1.4 Safety equipment, <i>tools, materials and other equipment</i> are selected and checked</p>
2. Assess vehicle paintwork for damage	<p>2.1 Vehicle to be inspected is located</p> <p>2.2 Preferred inspection method is determined that conforms to workplace policies and procedures, legal requirements, and specifications of vehicle manufacturer or component suppliers</p> <p>2.3 Paintwork is inspected to identify <i>vehicle paintwork damage</i> and potential <i>paint problems</i></p> <p>2.4 Vehicle is inspected in line with workplace policies and procedures, legal requirements, specification of vehicle manufacturer or component suppliers, safety requirements and workplace environmental practices</p>
3. Gather data and specifications	<p>3.1 Painting specifications are identified and documented</p> <p>3.2 Staff and management are consulted to identify additional or altered specifications</p> <p>3.3 Existing paint refinishing materials and equipment are evaluated</p> <p>3.4 Data and specifications are compiled and documented</p>
4. Evaluate and select materials, equipment and processes	<p>4.1 Materials and equipment options are determined</p> <p>4.2 Materials and equipment are assessed for quality finish and conformity to standards</p> <p>4.3 Specifications of materials and equipment are compared for performance and cost</p> <p>4.4 Commercial, environmental and safety impact of materials and equipment selected is determined</p> <p>4.5 Materials, equipment and processes are selected based on performance, cost, specifications and impact comparison</p> <p>4.6 Evaluation report detailing required specifications and repair process is completed according to workplace policies and procedures, and legal requirements</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>analyse information relating to paintwork materials and equipment</li><li>interpret technical specifications</li><li>analyse regulatory, environmental and safety procedures, best practice and future trends</li><li>research evaluation results.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>consult with staff and management to inform research and data gathering.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>organise activities</li><li>systematically identify, research and evaluate options.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify and resolve potential technical and procedural problems and variables within scope of own responsibility.</li></ul>
Teamwork skills to:	<ul style="list-style-type: none"><li>work effectively and cooperatively with others in identifying specifications that contribute to evaluation of paintwork repair requirements.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety requirements</i></b> are to be in accordance with applicable commonwealth, state or territory Workplace Health and Safety Act or Occupational Health and Safety Act and must include:	<ul style="list-style-type: none"> <li>ensuring safe location of vehicle to be inspected</li> <li>following workplace safety procedures</li> <li>identifying potential safety hazards.</li> </ul>
<b><i>Workplace policies and procedures</i></b> must include:	<ul style="list-style-type: none"> <li>environment and sustainability</li> <li>job specifications</li> <li>manufacturer specifications and industry codes of practice</li> <li>quality policies and procedures, including Australian standards</li> <li>reporting and recording procedures</li> <li>safe work procedures.</li> </ul>
<b><i>Legal requirements</i></b> are to be in accordance with applicable commonwealth, state, or territory legislation, regulations, certification requirements and codes of practice, and must include:	<ul style="list-style-type: none"> <li>environmental regulations</li> <li>intellectual property.</li> </ul>
<b><i>Component supplier specifications</i></b> must include at least one of the following:	<ul style="list-style-type: none"> <li>vehicle design specifications and drawings</li> <li>repair instructions and procedures</li> <li>component replacement instructions and procedures.</li> </ul>
<b><i>Tools, materials and other equipment</i></b> must include:	<ul style="list-style-type: none"> <li>calculators and general office equipment</li> <li>computer hardware and software</li> <li>digital camera</li> <li>paint code list</li> <li>portable light</li> <li>recording equipment, such as a laptop or notebook</li> <li>specialist tools, including: <ul style="list-style-type: none"> <li>colour spectrometer</li> <li>paint film thickness gauge.</li> </ul> </li> </ul>
<b><i>Vehicle paintwork damage</i></b>	<ul style="list-style-type: none"> <li>bolt-on vehicle painted components</li> </ul>

must include:	<ul style="list-style-type: none"><li>• paint blend</li><li>• welded vehicle painted components.</li></ul>
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## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURVNP001 Evaluate vehicle paintwork for damage and identify refinish requirements

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- evaluate vehicle paintwork for damage and identify refinish requirements on a minimum of two different damaged vehicles
- determine the impact of decisions in terms of commercial, environmental and safety risks
- document refinish materials, equipment and processes.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- motor vehicle paintwork damage and refinishing techniques, including:
  - damage and faults
  - paint problems, including:
    - blistering
    - delaminating
    - flaking
    - humidity bubbles
    - inclusions
    - incorrect:
      - colour
      - film build
      - mottle
      - orange peel
      - poor cover or hiding
  - paint types:
    - acrylic enamel
    - air dry enamel
    - clear over base (COB)
    - fillers
    - multi-layer
    - pearls
    - polyurethane
    - special effects
    - waterborne paint
    - two-pack paint
- current assessing and quoting methodologies
- vehicle paint testing equipment and procedures
- current vehicle material allowances
- relevant automotive websites to locate information on current best practice and future trends in the vehicle loss assessment environment
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - intellectual property
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory Fair Trading Act
- methods for sourcing paint manufacturer specifications
- applicable commonwealth, state or territory laws, regulations and standards relating to evaluating the paintwork of a damaged vehicle, and suggesting repair materials, equipment and processes, including:
  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property

- personal legal liability
- applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to evaluating paintwork of a damaged vehicle, and suggesting refinish materials, equipment and processes, including:
  - recording and reporting procedures.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have evaluated, e.g. evaluation reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of vehicles with both minor and extensive paint damage
- computer hardware, software and calculators
- internet access
- paint testing equipment
- relevant information, including paint manufacturer specifications
- workplace technology.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURVTA005 Clean vehicles

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to clean a vehicle. It requires the learner to plan and prepare the task; clean the vehicle interior, exterior and engine bay; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Vehicle Body

### Unit Sector

Technical

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to clean vehicle	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 <b><i>Vehicle</i></b> to be worked on is identified and manufacturer specifications and workplace procedures for vehicle cleaning are sourced and interpreted</p> <p>1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p> <p>1.4 <b><i>Tools and equipment</i></b> required for vehicle cleaning are identified according to manufacturer specifications</p>
2. Clean vehicle interior and fittings	<p>2.1 Tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures</p> <p>2.2 Vehicle is prepared prior to cleaning interior and fittings according to safety and environmental requirements</p> <p>2.3 <b><i>Interior surfaces</i></b> are cleaned and vacuumed using correct cleaning materials and equipment, without causing damage to components, tools or equipment</p>
3. Clean vehicle exterior and fittings	<p>3.1 Tools, equipment and materials are selected and checked according to manufacturer specifications</p> <p>3.2 Vehicle is prepared prior to cleaning exterior and fittings according to safety and environmental requirements</p> <p>3.3 Vehicle exterior and fittings are cleaned using correct techniques and without causing damage to components, tools or equipment</p>
4. Clean engine bay	<p>4.1 Tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures</p> <p>4.2 Vehicle is prepared prior to cleaning engine bay according to safety and environmental requirements</p> <p>4.3 Electronic components and electrical connections are protected from water ingress</p> <p>4.4 Engine bay is cleaned without causing damage to components, tools or equipment</p>
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace standards and vehicle is presented ready for use or storage according to

ELEMENTS	PERFORMANCE CRITERIA
	<p>workplace procedures</p> <p>5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p> <p>5.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary</p> <p>5.4 Problems with cleaning equipment or tools are reported according to workplace procedures</p> <p>5.5 Workplace documentation is processed according to workplace procedures</p>

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	<ul style="list-style-type: none"><li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures for cleaning a vehicle</li><li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li></ul>
Writing skills to:	<ul style="list-style-type: none"><li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li></ul>
Oral communication skills to:	<ul style="list-style-type: none"><li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li></ul>
Numeracy skills to:	<ul style="list-style-type: none"><li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios and amounts of cleaning products.</li></ul>
Planning and organising skills to:	<ul style="list-style-type: none"><li>plan own work requirements and prioritise actions to complete the vehicle cleaning task.</li></ul>
Self-management skills to:	<ul style="list-style-type: none"><li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li></ul>
Problem-solving skills to:	<ul style="list-style-type: none"><li>identify potential or actual hazards and take action to minimise risk</li><li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li></ul>
Technology skills to:	<ul style="list-style-type: none"><li>set up and operate equipment and tools required to clean a vehicle.</li></ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

**Italicised wording, if used in the performance criteria, is detailed below.**

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:               <ul style="list-style-type: none"> <li>use of personal protective equipment, including safety glasses, ear protection, gloves and safety footwear</li> <li>applying procedures for preventing waste water from entering storm water systems.</li> </ul> </li> </ul>
<b><i>Vehicle</i></b> must include one or more of the following:	<ul style="list-style-type: none"> <li>passenger motor vehicle</li> <li>light commercial</li> <li>heavy vehicle</li> <li>motor cycle</li> <li>constructed vehicle.</li> </ul>
<b><i>Tools and equipment</i></b> must include:	<ul style="list-style-type: none"> <li>hoses and washing equipment</li> <li>chemicals and cleaning solutions</li> <li>polishing equipment.</li> </ul>
<b><i>Interior surfaces</i></b> must include:	<ul style="list-style-type: none"> <li>cloth</li> <li>glass</li> <li>leather.</li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURVTA005 Clean vehicles

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria and foundation skills:

- safely and correctly clean a minimum of two different vehicles.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - personal protective equipment, including safety glasses, gloves, ear protection and safety footwear
  - operation of equipment and tools, including pressurised hoses
  - safety data sheets (SDS) and types, use and location of cleaning products
  - procedures for preventing waste water from entering storm water system
  - disposal of chemicals, oil and rubbish
- identification and location of vehicle components, including:
  - engine bay
  - engine electrical components
  - interior and exterior fittings
- types of vehicle body finishes
- vehicle cleaning procedures, including:
  - types, application and use of vehicle cleaning areas and vehicle bays
  - types, application and use of cleaning equipment and materials
  - component protection procedures, including:
    - protection of engine bay air intake and electrical and electronic components
    - protection of body electrical components
  - vehicle interior, exterior, fitting and engine bay cleaning procedures
  - cloth and leather interior surfaces cleaning procedures
  - chrome and polished alloy wheels cleaning procedures
- clean-up and maintenance requirements for vehicle cleaning area.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have cleaned, e.g. job card.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- a minimum of two different vehicles with cloth, glass and leather interior components, requiring cleaning
- vehicle cleaning tools, equipment and materials, including:
  - hoses and washing equipment
  - chemicals and cleaning solutions
  - polishing equipment
- vehicle cleaning area.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURVTP029 Prepare surface and prime repaired body panels

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to prepare and prime a repaired body panel of a vehicle. It requires the learner to plan and prepare the task; identify types of automotive abrasives; remove protective waxes and surface contaminants; feather paint edges; apply filler; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Vehicle Body

### Unit Sector

Technical - Paint

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1.1 Prepare to prime a repaired body panel	1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted 1.2 Task instruction is interpreted and vehicle body panel to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for removing paint and preparing surface are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Tools and equipment required for priming body panel are identified according to manufacturer specifications
2. Prepare body panel for priming	2.1 <b><i>Tools, equipment and materials</i></b> for priming body panel are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 <b><i>Vehicle body panel</i></b> is prepared for priming according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment 2.3 Body panel is inspected according to manufacturer specifications 2.4 Body panel inspection results are recorded
3. Apply primer to body panel	3.1 Primer is prepared for application according to manufacturer specifications and safety and environmental requirements 3.2 Primer is applied according to workplace procedures, manufacturer specifications, and safety and environmental requirements 3.3 Primer is applied to body panel without causing damage to body panel, components, tools or equipment 3.4 Body panel is inspected to ensure correct application of primer to body panel 3.5 Body panel inspection results are recorded
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and body panels are primed ready for use or storage according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored according to

ELEMENTS	PERFORMANCE CRITERIA
	workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"> <li>locate appropriate sources of vehicle panel and priming information and procedures.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures for priming a repaired body panel</li> <li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li> </ul>
Oral communication skills to:	<ul style="list-style-type: none"> <li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>read and interpret numerical information in paint information</li> <li>use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate volumes and ratios.</li> </ul>
Planning and organising skills to:	<ul style="list-style-type: none"> <li>plan own work requirements and prioritise actions to achieve required outcomes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>recognise own limitations when selecting and using tools and equipment and seek timely advice.</li> </ul>
Problem-solving skills to:	<ul style="list-style-type: none"> <li>identify potential or actual hazards and take action to minimise risk</li> <li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>set up and operate equipment and tools required to prime repaired body panels.</li> </ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including: <ul style="list-style-type: none"> <li>use of personal protective equipment, including safety glasses, ear protection and safety footwear</li> <li>use of hand tools</li> <li>procedures for handling and disposing of used primer, emulsions and solvents</li> <li>procedures for extracting fumes.</li> </ul> </li> </ul>
<b><i>Tools, equipment and materials</i></b> must include:	<ul style="list-style-type: none"> <li>preparation and spray areas with fume extraction</li> <li>spray gun equipment</li> <li>wet and dry paper</li> <li>spray gun equipment</li> <li>sanding discs</li> <li>emulsion materials</li> <li>filler</li> <li>primers, including: <ul style="list-style-type: none"> <li>etch primer</li> <li>primer surfacer.</li> </ul> </li> </ul>
<b><i>Vehicle body panel</i></b> must include:	<ul style="list-style-type: none"> <li>a major body panel from one of the following: <ul style="list-style-type: none"> <li>passenger vehicle</li> <li>light commercial vehicle</li> <li>heavy vehicle</li> <li>constructed vehicle.</li> </ul> </li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

## Assessment Requirements for AURVTP029 Prepare surface and prime repaired body panels

### Modification History

Release	Comment
Release 1	New unit of competency

### Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria and foundation skills:

- correctly surface prepare and prime a minimum of two major vehicle body panels.

### Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools, including air and electric sanders
  - safety data sheets (SDS) and procedures for handling and disposing of used primer, emulsions and solvents
  - procedures for extraction of fumes
- types, grades and uses of abrasives and sandpaper
- workplace procedures for:
  - wet and dry sanding
  - surface preparation
  - paint feather edging and precautions
- types of filler and primers and their use
- filler and primer application procedures
- work area clean-up and maintenance requirements.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the repaired body panels that they have surface prepared and primed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two major vehicle body panels
- tools, equipment and materials, including:
  - preparation and spray areas with fume extraction
  - spray gun equipment
  - wet and dry paper
  - spray gun equipment
  - sanding discs
  - emulsion materials
  - filler
  - primers, including:
    - etch primer
    - primer surfacer
  - solvents.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## AURVTW010 Set up and use welding equipment

### Modification History

Release	Comment
Release 1	New unit of competency

### Application

This unit describes the performance outcomes required to set up and use welding equipment to weld a range of materials. It requires the learner to plan and prepare the task; select and set up the correct welding equipment; weld using different welding techniques; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### Competency Field

Vehicle Body

### Unit Sector

Technical - Welding, Grinding, Machining and Soldering

## Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to set up and use welding equipment	<p>1.1 <b><i>Safety and environmental requirements</i></b> are sourced and interpreted</p> <p>1.2 Task instruction is interpreted and welding equipment, tools and materials needed to complete the task are determined</p> <p>1.3 Manufacturer specifications and workplace procedures for use of welding equipment and associated materials are sourced and interpreted</p> <p>1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor</p>
2. Set up welding equipment and materials	<p>2.1 Identified <b><i>welding equipment, tools and materials</i></b> are sourced and checked according to manufacturer specifications, workplace procedures and safety requirements</p> <p>2.2 <b><i>Welding equipment is set up</i></b> according to manufacturer specifications, workplace procedures and safety requirements</p> <p>2.3 Materials to be welded are identified and sourced</p>
3. Use welding equipment	<p>3.1 Welding equipment and materials set up for the task are checked prior to use according to manufacturer specifications, workplace procedures and safety requirements</p> <p>3.2 Welding method and precautions outlined in the task instruction are interpreted and followed</p> <p>3.3 <b><i>Welding task and demonstration</i></b> are carried out correctly according to manufacturer specifications, workplace procedures and safety requirements</p>
4. Complete work processes	<p>4.1 Final inspection is made to ensure work is completed according to task instruction and workplace standards</p> <p>4.2 Welding equipment and tools are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary</p> <p>4.3 Problems with welding equipment or tools are reported according to workplace procedures</p> <p>4.4 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures</p>

ELEMENTS	PERFORMANCE CRITERIA
	4.5 Workplace documentation is processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	<ul style="list-style-type: none"> <li>locate appropriate sources of welding information and procedures.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to set up and safely operate welding equipment</li> <li>select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>legibly and accurately fill out workplace documentation using correct industry terminology and conventions.</li> </ul>
Oral communication skills to:	<ul style="list-style-type: none"> <li>participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>use basic mathematical operations, including addition, subtraction, multiplication, division to calculate percentages, and to calculate, calibrate and set equipment settings</li> <li>read and interpret numerical information in welding equipment identification figures.</li> </ul>
Planning and organising skills to:	<ul style="list-style-type: none"> <li>plan own work and prioritise actions to set up, undertake and complete the welding task.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>recognise own limitations when selecting and using tools and welding equipment and seek timely advice.</li> </ul>
Problem-solving skills to:	<ul style="list-style-type: none"> <li>identify hazards or potential hazards and take action to minimise risk</li> <li>refer problems that cannot be readily resolved and seek assistance from workplace supervisor.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>set up and operate equipment and tools required to complete the welding task.</li> </ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Bold italicised wording, if used in the performance criteria, is detailed below.

<b><i>Safety and environmental requirements</i></b> must include:	<ul style="list-style-type: none"> <li>information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including: <ul style="list-style-type: none"> <li>use of personal protective equipment, including safety glasses and welding helmets, ear protections and safety footwear</li> <li>use of fume extraction system and welding bay</li> <li>disposal of welding material and wastes.</li> </ul> </li> </ul>
<b><i>Welding equipment, tools and materials</i></b> must include:	<ul style="list-style-type: none"> <li>one of the following welders: <ul style="list-style-type: none"> <li>metal arc welder</li> <li>gas metal arc (MIG) welder</li> </ul> </li> <li>welding bay, curtains and fume extraction</li> <li>fluxes, gases, welding rods and wire.</li> </ul>
<b><i>Setting up welding equipment</i></b> must include:	<ul style="list-style-type: none"> <li>checking for leaks from gas bottles</li> <li>checking and adjusting gas pressures</li> <li>checking gas plant earth straps and clamps.</li> </ul>
<b><i>Welding task and demonstration</i></b> must include:	<ul style="list-style-type: none"> <li>producing the following types of welds: <ul style="list-style-type: none"> <li>butt weld</li> <li>lap weld</li> <li>bead run</li> </ul> </li> </ul>

## Unit Mapping Information

No equivalent unit.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

# Assessment Requirements for AURVTW010 Set up and use welding equipment

## Modification History

Release	Comment
Release 1	New unit of competency

## Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria and foundation skills:

- set up and use welding equipment on at least two occasions.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - safety data sheets (SDS) and toxic chemicals and gases used and produced in welding
  - potential hazards and risks relating to welding, including fire hazards and ultraviolet skin and eye damage
  - use of personal protective equipment, including safety glasses and welding helmets, ear protections and safety footwear
  - use of fume extraction system and welding bay
  - disposal of welding material and wastes
- types of welding equipment, including:
  - metal arc
  - gas metal arc
- types of fluxes and gases used in welding
- welding equipment set-up procedures
- types and purposes of different welding techniques
- key steps in different welding techniques.

## Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to welding activities, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application

The following resources must be made available:

- automotive workplace or simulated workplace
- welding equipment and tools, including at least one of the following:
- metal arc welder
- MIG welder
- welding bay, curtains and fume extraction
- fluxes, gases, welding rods and wire.

## Links

Implementation Guide - <http://www.asacompanionvolumes.com.au/aur-implementation-guide>

Assessment Strategies Guide -

<http://www.asacompanionvolumes.com.au/aur-assessment-guide>

## BSBCUS301B Deliver and monitor a service to customers

### Modification History

Release	Comments
Release 1	<p>This version first released with <i>BSB07 Business Training Package version 6.0</i></p> <p>Revised unit. Performance criteria amended so that the learner is not required to 'incorporate evidence of customer satisfaction in decision to modify products or services'. Required skills updated to focus on learning and development practices and compliance with policy and procedures.</p> <p>Replaces BSBCUS301A Deliver and monitor a service to customers</p>

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to identify customer needs and monitor service provided to customers. Operators may exercise discretion and judgement using appropriate theoretical knowledge of customer service to provide technical advice and support to customers over either a short or long term interaction.

### Application of the Unit

This unit applies to individuals who are skilled operators and apply a broad range of competencies in various work contexts.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

### Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Identify customer needs	<p>1.1 Use <i>appropriate interpersonal skills</i> to accurately identify and clarify <i>customer needs and expectations</i></p> <p>1.2 Assess customer needs for urgency to determine priorities for service delivery according to <i>organisational requirements</i></p> <p>1.3 Use <i>effective communication</i> to inform customers about available choices for meeting their needs and assist in the selection of preferred options</p> <p>1.4 Identify limitations in addressing customer needs and seek appropriate assistance from <i>designated individuals</i></p>
2. Deliver a service to customers	<p>2.1 Provide prompt service to customers to meet identified needs in accordance with organisational requirements</p> <p>2.2 Establish and maintain appropriate rapport with customers to ensure completion of quality service delivery</p> <p>2.3 Sensitively and courteously handle <i>customer complaints</i> in accordance with organisational requirements</p> <p>2.4 Provide assistance or respond to customers with <i>specific needs</i> according to organisational requirements</p> <p>2.5 Identify and use available <i>opportunities</i> to promote and enhance services and products to customers</p>
3. Monitor and report on service delivery	<p>3.1 Regularly review customer satisfaction with service delivery using <i>verifiable evidence</i> according to organisational requirements</p> <p>3.2 Identify opportunities to enhance the quality of service and products, and pursue within organisational requirements</p> <p>3.3 Monitor procedural aspects of service delivery for effectiveness and suitability to customer requirements</p> <p>3.4 Regularly seek customer feedback and use to improve the provision of products and services</p> <p>3.5 Ensure reports are clear, detailed and contain recommendations focused on critical aspects of service delivery</p>

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- analytical skills to identify trends and positions of products and services
- communication skills to monitor and advise on customer service strategies
- literacy skills to:
  - edit and proofread texts to ensure clarity of meaning and accuracy of grammar and punctuation
  - prepare general information and papers according to target audience
  - read and understand a variety of texts
- problem-solving skills to deal with customer enquiries or complaints
- technology skills to select and use technology appropriate to a task
- self-management skills to:
  - comply with policies and procedures
  - consistently evaluate and monitor own performance
  - seek learning opportunities.

### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - financial legislation
  - occupational health and safety (OHS)
- organisational policy and procedures for customer service including handling customer complaints
- service standards and best practice models
- public relations and product promotion
- techniques for dealing with customers, including customers with specific needs.

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• identifying needs and priorities of customers</li> <li>• distinguishing between different levels of customer satisfaction</li> <li>• treating customers with courtesy and respect</li> <li>• responding to and reporting on, customer feedback</li> <li>• knowledge of organisational policy and procedures for customer service.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to office equipment and resources</li> <li>• examples of customer complaints</li> <li>• examples of documents relating to customer service standards and policies.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• review of reports on customer service delivery</li> <li>• analysis of responses to case studies and scenarios</li> <li>• demonstration of techniques</li> <li>• oral or written questioning to assess knowledge of customer service strategies.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>Appropriate interpersonal skills</i></b> may include:	<ul style="list-style-type: none"> <li>• listening actively to what the customer is communicating</li> <li>• providing an opportunity for the customer to confirm their request</li> <li>• questioning to clarify and confirm customer needs</li> <li>• seeking feedback from the customer to confirm understanding of needs</li> <li>• summarising and paraphrasing to check understanding of customer message</li> <li>• using appropriate body language.</li> </ul>
<b><i>Customers</i></b> may include:	<ul style="list-style-type: none"> <li>• corporate customers</li> <li>• individual members of the organisation</li> <li>• individual members of the public</li> <li>• internal or external</li> <li>• other agencies.</li> </ul>
<b><i>Customer needs and expectations</i></b> may include:	<ul style="list-style-type: none"> <li>• accuracy of information</li> <li>• advice or general information</li> <li>• complaints</li> <li>• fairness/politeness</li> <li>• further information</li> <li>• making an appointment</li> <li>• prices/value</li> <li>• purchasing organisation's products and services</li> <li>• returning organisation's products and services</li> <li>• specific information.</li> </ul>
<b><i>Organisational requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• access and equity principles and practice</li> <li>• anti-discrimination and related policy</li> <li>• defined resource parameters</li> <li>• goals, objectives, plans, systems and processes</li> <li>• legal and organisational policies, guidelines and requirements</li> <li>• OHS policies, procedures and programs</li> <li>• payment and delivery options</li> <li>• pricing and discount policies</li> <li>• quality and continuous improvement processes and</li> </ul>

	standards <ul style="list-style-type: none"> <li>• quality assurance and/or procedures manuals</li> <li>• replacement and refund policy and procedures</li> <li>• who is responsible for products or services.</li> </ul>
<b>Effective communication</b> may include:	<ul style="list-style-type: none"> <li>• giving customers full attention</li> <li>• maintaining eye contact, except where eye contact may be culturally inappropriate</li> <li>• speaking clearly and concisely</li> <li>• using active listening techniques</li> <li>• using appropriate language and tone of voice</li> <li>• using clear written information/communication</li> <li>• using non-verbal communication e.g. body language, personal presentation (for face-to-face interactions)</li> <li>• using open and/or closed questions.</li> </ul>
<b>Designated individuals</b> may include:	<ul style="list-style-type: none"> <li>• colleagues</li> <li>• customers</li> <li>• line management</li> <li>• supervisor.</li> </ul>
<b>Customer complaints</b> may include:	<ul style="list-style-type: none"> <li>• administrative errors such as incorrect invoices or prices</li> <li>• customer satisfaction with service quality</li> <li>• damaged goods or goods not delivered</li> <li>• delivery errors</li> <li>• product not delivered on time</li> <li>• service errors</li> <li>• warehouse or store room errors such as incorrect product delivered.</li> </ul>
<b>Specific needs</b> of customers may relate to:	<ul style="list-style-type: none"> <li>• age</li> <li>• beliefs/values</li> <li>• culture</li> <li>• disability</li> <li>• gender</li> <li>• language</li> <li>• religious/spiritual observances.</li> </ul>
<b>Opportunities</b> to promote and enhance services and products may include:	<ul style="list-style-type: none"> <li>• extending time lines</li> <li>• packaging procedures</li> <li>• procedures for delivery of goods</li> <li>• returns policy</li> <li>• system for recording complaints</li> <li>• updating customer service charter.</li> </ul>
<b>Verifiable evidence</b> may include:	<ul style="list-style-type: none"> <li>• customer satisfaction questionnaires</li> <li>• audit documentation and reports</li> </ul>

	<ul style="list-style-type: none"><li>• quality assurance data</li><li>• returned goods</li><li>• lapsed customers</li><li>• service calls</li><li>• complaints.</li></ul>
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## Unit Sector(s)

Stakeholder Relations – Customer Service

## Custom Content Section

Not applicable.

## BSBCUS501C Manage quality customer service

### Modification History

Release	Comments
Release 1	<p>New release of this Qualification released with <i>version 6 of BSB07 Business Services Training Package</i>.</p> <p>Revised unit. Required skills updated to focus on learning and development practices and compliance with policy and procedures.</p>

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to develop strategies to manage organisational systems that ensure products and services are delivered and maintained to standards agreed by the organisation.

Operators may have staff involved in delivering customer service and are responsible for the quality of their work. In many instances the work will occur within the organisation's policies and procedures framework. At this level, the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies, will be required.

### Application of the Unit

Many managers are involved in ensuring that products and services are delivered and maintained to standards agreed by the organisation.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Not applicable.

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Plan to meet internal and external customer requirements	<p>1.1 Investigate, identify, assess, and include the needs of <b>customers</b> in planning processes</p> <p>1.2 Ensure plans achieve the <b>quality</b>, time and cost specifications agreed with customers</p>
2. Ensure delivery of quality products and services	<p>2.1 Deliver <b>products and services</b> to customer specifications within organisation's business plan</p> <p>2.2 Monitor team performance to consistently meet the organisation's quality and delivery standards</p> <p>2.3 Assist colleagues to overcome difficulty in meeting customer service standards</p>
3. Monitor, adjust and review customer service	<p>3.1 Develop and use <b>strategies</b> to monitor progress in achieving product and/or service targets and standards</p> <p>3.2 Develop and use strategies to obtain customer feedback to improve the provision of products and services</p> <p>3.3. Develop, procure and use <b>resources</b> effectively to provide quality products and services to customers</p> <p>3.4 Make decisions to overcome problems and to adapt customer services, products and service delivery in consultation with appropriate individuals and groups</p> <p>3.5 Manage records, reports and recommendations within the organisation's systems and processes</p>

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- analytical skills to identify trends and positions of products and services
- communication skills to:
  - coach and mentor staff and colleagues
  - monitor and advise on customer service strategies
- literacy skills to:
  - edit and proofread texts to ensure clarity of meaning and accuracy of grammar and punctuation
  - prepare general information and papers according to target audience
  - read and understand a variety of texts
- problem-solving skills to:
  - deal with customer enquiries or complaints
  - deal with complex and non-routine difficulties
- technology skills to select and use technology appropriate to a task
- self-management skills to:
  - comply with policies and procedures
  - consistently evaluate and monitor own performance
  - seek learning opportunities.

### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - Australian consumer law
  - ethical principles
  - codes of practice
  - privacy laws
  - financial legislation
  - occupational health and safety (OHS)
- organisational policy and procedures for customer service including handling customer complaints
- service standards and best practice models
- public relations and product promotion
- techniques for dealing with customers, including customers with specific needs
- techniques for solving complaints including the principles and techniques involved in the management and organisation of:
  - customer behaviour
  - customer needs research
  - customer relations
  - ongoing product and/or service quality
  - problem identification and resolution

- quality customer service delivery
- record keeping and management methods
- strategies for monitoring, managing and introducing ways to improve customer service relationships
- strategies to obtain customer feedback.

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>plans, policies or procedures for delivering quality customer service</li> <li>demonstrated techniques in solving complex customer complaints and system problems that lead to poor customer service</li> <li>knowledge of techniques for solving complaints.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>access to appropriate documentation and resources normally used in the workplace.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>assessment of written reports</li> <li>demonstration of techniques</li> <li>direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>observation of performance in role plays</li> <li>evaluation of leadership, supervision, coaching and mentoring used to assist colleagues to overcome difficulty in meeting customer service standards</li> <li>review of strategies developed and used to monitor progress in achieving product and/or service targets and standards</li> <li>review of records, reports and recommendations about managing customer service.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>Customers</i></b> may be:	<ul style="list-style-type: none"> <li>• Board members</li> <li>• clients, purchasers of services</li> <li>• co-workers, peers and fellow frontline managers</li> <li>• members of the general public who make contact with the organisation, such as prospective purchasers of services</li> <li>• potential funding bodies</li> <li>• supervisors</li> <li>• suppliers of goods and services and contractors providing goods and services.</li> </ul>
<b><i>Quality</i></b> may refer to:	<ul style="list-style-type: none"> <li>• characteristics of a product, system, service or process that meet the requirements of customers and interested parties.</li> </ul>
<b><i>Products and services</i></b> may include:	<ul style="list-style-type: none"> <li>• either products or services</li> <li>• goods</li> <li>• ideas</li> <li>• infrastructure</li> <li>• private or public sets of benefits.</li> </ul>
<b><i>Strategies</i></b> may refer to:	<ul style="list-style-type: none"> <li>• databases and other controls to record and compare data over time</li> <li>• electronic feedback mechanisms using intranet, internet and email</li> <li>• feedback forms and other devices to enable communication from customers</li> <li>• long-term or short-term plans for monitoring achievement and evaluating effectiveness</li> <li>• policies and procedures</li> <li>• questionnaires, survey and interviews</li> <li>• training and development activities.</li> </ul>
<b><i>Resources</i></b> may include:	<ul style="list-style-type: none"> <li>• buildings/facilities</li> <li>• equipment</li> <li>• finance</li> <li>• information</li> <li>• people</li> <li>• power/energy</li> </ul>

	<ul style="list-style-type: none"><li>• technology</li><li>• time.</li></ul>
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## Unit Sector(s)

Stakeholder Relations – Customer Service

## Custom Content Section

Not applicable.

## BSBFIA301A Maintain financial records

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to maintain financial records for a business. It includes maintaining daily financial records such as reconciling debtors' and creditors' systems, preparing and maintaining a general ledger, and preparing a trial balance. It also includes activities associated with monitoring cash control for accounting purposes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who are skilled operators and apply a broad range of competencies in various work contexts. They may exercise discretion and judgement using appropriate theoretical knowledge of financial records to provide technical advice and support to a team.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Maintain daily financial records	<p>1.1. Correctly maintain daily financial records and in accordance with <b><i>organisational requirements</i></b> for accounting purposes</p> <p>1.2. Identify and rectify or refer <b><i>discrepancies</i></b> or errors in <b><i>documentation</i></b> or transactions to <b><i>designated persons</i></b> in accordance with organisational requirements</p> <p>1.3. Accurately credit and debit transactions and promptly enter into <b><i>journals</i></b> in accordance with organisational requirements</p>
2. Maintain general ledger	<p>2.1. Maintain general ledger in accordance with organisational requirements</p> <p>2.2. Post <b><i>transactions</i></b> into general ledger in accordance with organisational reporting requirements</p> <p>2.3. <b><i>Reconcile systems for accounts payable and receivable</i></b> with general ledger</p> <p>2.4. Accurately prepare trial balance from general ledger in accordance with organisational requirements</p>
3. Monitor cash control	<p>3.1. Ensure cash flow is accurately accounted for in accordance with organisational requirements</p> <p>3.2. Make and receive <b><i>payments</i></b> in accordance with organisational requirements</p> <p>3.3. Collect or follow-up outstanding accounts within designated time lines</p> <p>3.4. Check payment documentation for accuracy of information and despatch to creditors within <b><i>designated time line</i></b></p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- literacy skills to identify financial information; to read and understand the organisation's accounting procedures; and to edit and proofread documents to ensure conformity and consistency of information
- communication skills to clarify information and to refer errors or discrepancies to appropriate people
- numeracy skills to read and interpret financial data and to prepare cash analysis sheets
- problem-solving skills to reconcile figures.

#### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - financial legislation
  - occupational health and safety (OHS)
- organisational policies and procedures relating to maintaining financial records
- definition of credits/creditors and debits/debtors
- principles of double entry bookkeeping and accrual accounting
- methods of presenting financial data.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>identifying and responding to discrepancies and errors</li> <li>transferring and recording financial data accurately</li> <li>reconciling expenditures and revenue</li> <li>knowledge of organisational policies and procedures relating to maintaining financial records.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>access to an actual workplace or simulated environment</li> <li>access to office equipment and resources</li> <li>examples of source documents relating to financial record keeping.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>review of identification and rectification or referral of discrepancies or errors in documentation or transactions</li> <li>analysis of responses to case studies and scenarios</li> <li>demonstration of techniques</li> <li>oral or written questioning to assess knowledge of financial record keeping</li> <li>examples of financial documentation.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>general administration units</li> <li>other financial administration units.</li> </ul>



## Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Organisational requirements</i></b> may include:	<ul style="list-style-type: none"> <li>designated time lines</li> <li>guidelines for reconciling journals</li> <li>legal and organisational policies, guidelines and requirements</li> <li>OHS policies, procedures and programs</li> <li>procedures for totalling adjusted journals</li> <li>quality assurance and/or procedures manuals</li> <li>resolution procedures</li> <li>security procedures</li> </ul>
<b><i>Discrepancies</i></b> may relate to:	<ul style="list-style-type: none"> <li>bank charges</li> <li>dishonoured cheques</li> <li>errors in transposing between source documents and journals</li> <li>interest</li> </ul>
<b><i>Documentation</i></b> may include:	<ul style="list-style-type: none"> <li>purchase credit notes</li> <li>purchase invoices</li> <li>sales credit notes</li> <li>sales invoices</li> </ul>
<b><i>Designated persons</i></b> may include:	<ul style="list-style-type: none"> <li>bank</li> <li>line management</li> <li>organisation's authorisations department</li> <li>statutory body</li> <li>supervisor</li> </ul>
<b><i>Journals</i></b> may include:	<ul style="list-style-type: none"> <li>cash payments</li> <li>cash receipts</li> <li>purchases and purchase returns</li> <li>sales and sales returns</li> </ul>
<b><i>Transactions</i></b> may include:	<ul style="list-style-type: none"> <li>commencing business entries</li> <li>correction of posting errors</li> <li>interest expense</li> <li>interest receivable</li> <li>non-cash transactions (e.g. writing-off</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>depreciation, stock losses)</li> <li>• purchase of a fixed asset on credit</li> <li>• sale of a fixed asset on credit</li> <li>• withdrawal of stock/assets by owner</li> <li>• write-off a bad debt</li> </ul>
<i>Reconciling systems for accounts payable and receivable</i> may include:	<ul style="list-style-type: none"> <li>• checking accuracy of creditor account balances (e.g. cash payments journal, purchases journal, purchases returns journal, general journal)</li> <li>• checking accuracy of debtor account balances (e.g. cash receipts journal, sales return journal, general journal)</li> <li>• checking cash payments and receipt journals against bank statement</li> <li>• checking the total of the creditor's schedule equals the balance of the creditor's control account</li> <li>• checking the total of the debtor's schedule equals the balance of the debtor's control account</li> </ul>
<i>Payments</i> may include:	<ul style="list-style-type: none"> <li>• cash</li> <li>• cheque</li> <li>• credit card</li> <li>• direct debit</li> </ul>
<i>Designated time lines</i> may include:	<ul style="list-style-type: none"> <li>• by month end</li> <li>• monthly</li> <li>• within agreed period</li> <li>• within organisational deadline</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Finance - Financial Administration
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**Co-requisite units**

<b>Co-requisite units</b>		

## BSBFIA303A Process accounts payable and receivable

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to maintain accounts payable and accounts receivable records, including processing payments to creditors and handling overdue accounts receivable.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals employed in a range of work environments supporting the accounting functions and aspects of an enterprise. They may provide administrative support within an enterprise, or may be members of staff who have been delegated accounting responsibilities.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Maintain financial journal systems	<p>1.1. Check <i>source documents</i> for accuracy and appropriate authorisation</p> <p>1.2. Refer errors and discrepancies in source documents for resolution, in accordance with organisational policy and procedures</p> <p>1.3. Enter <i>transactions</i> into cash and credit <i>journal system</i> in accordance with organisational policy and procedures, and <i>relevant legislation and compliance requirements</i></p> <p>1.4. Total credit journals in accordance with organisational policy and procedures</p>
2. Prepare bank reconciliations	<p>2.1. Check cash journals against bank statements to identify differences</p> <p>2.2. Update cash journals with relevant data from bank statement/s</p> <p>2.3. Identify <i>discrepancies</i> and refer to appropriate staff member, organisation or agency</p> <p>2.4. Total cash journals in accordance with organisational policy and procedures</p> <p>2.5. Prepare regular reconciliation reports within designated time lines</p>
3. Maintain accounts payable and accounts receivable systems	<p>3.1. Enter transactions into individual <i>accounts payable and accounts receivable</i>, in accordance with organisational policy and procedures, and accounting requirements</p> <p>3.2. Prepare schedules of accounts payable and accounts receivable for reconciliation purposes, in accordance with organisational requirements</p> <p>3.3. Reconcile schedules accounts payable and accounts receivable with <i>journal data</i> or general ledger, in accordance with organisational requirements</p>
4. Process payments for accounts payable	<p>4.1. Reconcile accounts payable statements with accounting records, in accordance with organisational policy and procedures</p> <p>4.2. <i>Check payment documentation</i> for accuracy of information and discrepancies and rectify errors, in accordance with organisational requirements</p>
5. Prepare statements for accounts receivable	<p>5.1. Produce and check <i>accounts receivable statements</i> for accuracy of content in accordance with organisational policy and procedures</p>

ELEMENT	PERFORMANCE CRITERIA
	5.2.Rectify discrepancies and statements despatched within designated time lines
6. Follow up outstanding accounts	<p>6.1.Maintain accounts receivable ledger system, in accordance with organisational requirements, to reflect current credit situation</p> <p>6.2.Conduct aged analysis of accounts receivable to identify outstanding accounts and to determine collection procedures, in accordance with organisational requirements</p> <p>6.3.Report or follow-up outstanding accounts in accordance with organisational policy and procedures</p> <p>6.4.Monitor and review <i>credit terms</i> in accordance with credit policy and procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- literacy skills to read and understand financial procedures
- numeracy skills to:
  - use knowledge of mathematical concepts
  - interpret, compare and calculate with whole numbers and money
  - use decimal fractions and percentages
- problem-solving skills to use approximation to check for discrepancies and ensure calculations are correct.

#### Required knowledge

- key provisions of relevant legislation and regulations from all forms of government, standards and codes that may affect aspects of business operations, such as:
  - Australian Taxation Office regulations
  - Goods and Services Tax (GST) regulations
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - finance legislation
  - privacy laws
  - occupational health and safety
- limit of scope of own responsibility
- organisational accounting systems and procedures.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>maintaining journals and subsidiary ledger systems</li> <li>accurately entering data into journal and subsidiary ledger system</li> <li>reconciling subsidiary ledger system with journal or general ledger data.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>access to an actual workplace or simulated environment</li> <li>access to office equipment and resources, such as:             <ul style="list-style-type: none"> <li>calculator</li> <li>computer equipment and relevant software</li> </ul> </li> <li>access to examples of cash journals, credit journals, accounts payable and accounts receivable subsidiary ledgers</li> <li>access to workplace reference materials such as procedural manuals and company policy.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>analysis of responses to case studies and scenarios</li> <li>demonstration of techniques</li> <li>direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>review of authenticated documents from the workplace or training environment</li> <li>oral or written questioning to assess knowledge of accounting procedures and techniques.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>other financial administration units.</li> </ul>



## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Source documents*** may include:

- adjustment notes issued
- adjustment notes received
- cheque butts
- credit notes issued
- credit notes received
- invoices issued
- invoices received
- receipts
- tax invoices issued
- tax invoices received

***Transactions*** may include:

- capital contributions in cash by owner
- cash purchases
- cash sales
- commission
- credit purchases
- credit sales
- day-to-day expenses
- electronic funds transfer
- interest charges and bank fees
- interest revenue
- payments received from debtors
- payments to creditors
- petty cash transactions
- purchases paid by cheque
- returns
- withdrawal of cash by owner

***Journal system*** may include:

- cash payments journal
- cash receipts journal
- purchases journal
- purchases returns journal
- sales journal
- sales returns journal

<b>RANGE STATEMENT</b>	
<i>Systems</i> may include:	<ul style="list-style-type: none"> <li>• computerised</li> <li>• manual</li> </ul>
<i>Relevant legislation and compliance requirements</i> may include:	<ul style="list-style-type: none"> <li>• consumer: <ul style="list-style-type: none"> <li>• codes of practice</li> <li>• Australian Consumer Credit Code</li> <li>• privacy laws</li> <li>• secrecy laws</li> </ul> </li> <li>• competition: <ul style="list-style-type: none"> <li>• Australian Competition and Consumer Commission (ACCC), National Competition Policy</li> </ul> </li> <li>• prudential: <ul style="list-style-type: none"> <li>• commonwealth Bills of Exchange Act 1909</li> <li>• commonwealth Cheques and Payment Orders Act 1986</li> <li>• commonwealth Financial Transaction Reports Act 1988</li> <li>• commonwealth Land Tax Assessment Act 2002</li> <li>• commercial tenancies laws</li> <li>• corporate law</li> <li>• Credit Reference Association of Australia (CRAA)</li> <li>• Electronic Funds Transfer (EFT) Code of Conduct</li> <li>• Financial Institutions (FI) Code</li> <li>• payroll tax assessment laws and regulations</li> <li>• prescribed payments laws and regulations</li> <li>• stamp duties laws</li> <li>• taxation assessment laws</li> </ul> </li> </ul>
<i>Discrepancies</i> may include:	<ul style="list-style-type: none"> <li>• bank charges</li> <li>• direct deposits</li> <li>• direct payments</li> <li>• dishonoured cheques</li> <li>• interest</li> </ul>
<i>Accounts payable and accounts receivable systems</i> may include:	<ul style="list-style-type: none"> <li>• accounts payable schedule</li> <li>• accounts payable subsidiary ledger</li> <li>• accounts receivable schedule</li> <li>• accounts receivable subsidiary ledger</li> </ul>

<b>RANGE STATEMENT</b>	
<i>Journal data</i> may include:	<ul style="list-style-type: none"> <li>• accounts payable data from cash payments journal</li> <li>• accounts receivable data from cash receipts journal</li> <li>• purchases journal total</li> <li>• purchases returns journal total</li> <li>• sales journal total</li> <li>• sales returns journal total</li> </ul>
<i>Checking payment documentation</i> may include:	<ul style="list-style-type: none"> <li>• attachment of supporting invoices, statements</li> <li>• calculation of discount</li> <li>• cheque data</li> <li>• remittance advice data</li> </ul>
<i>Accounts receivable statements</i> may include:	<ul style="list-style-type: none"> <li>• any payments received allocated on an invoice by invoice basis</li> <li>• computerised system</li> <li>• discount policy</li> <li>• final balance with overdue details if appropriate</li> <li>• information about any sales, sales returns, credit, forward orders and payments, which have occurred throughout the month</li> <li>• manual system</li> <li>• month to which statement is applicable</li> <li>• name and address of client or accounts receivable</li> <li>• name and address of supplier</li> <li>• opening balance if applicable</li> </ul>
<i>Credit terms</i> may include:	<ul style="list-style-type: none"> <li>• arrangements for settlement</li> <li>• cancellation of agreed credit arrangements</li> <li>• cash on delivery</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Finance - Financial Administration
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**Co-requisite units**

<b>Co-requisite units</b>		

## BSBFIA401A Prepare financial reports

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to record general journal adjustment entries and to prepare end of period financial reports.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals employed in a range of work environments who are responsible for preparing financial reports. They may work as individuals providing administrative support within an enterprise, or they might have responsibility for these tasks in relation to their own workgroup or role.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Maintain asset register	<p>1.1.Prepare a register of property, plant and equipment from fixed asset transactions in accordance with organisational policy and procedures</p> <p>1.2.Determine method of <b>calculating depreciation</b> in accordance with organisational requirements</p> <p>1.3.Maintain asset register and associated depreciation schedule in accordance with organisational policy, procedures and accounting requirements</p>
2. Record general journal entries for balance day adjustments	<p>2.1.Record depreciation of non-current assets and disposal of fixed assets in accordance with organisational policy, procedures and accounting requirements</p> <p>2.2.Adjust <b>expense accounts</b> and <b>revenue accounts</b> for <b>prepayments and accruals</b></p> <p>2.3.Record <b>bad and doubtful debts</b> in accordance with organisational policy, procedures and accounting requirements</p> <p>2.4.Adjust ledger accounts for <b>inventories</b>, if required, and transfer to <b>final accounts</b></p>
3. Prepare final general ledger accounts	<p>3.1.Enter general journal entries for balance day adjustments in general ledger system in accordance with organisational policy, procedures and accounting requirements</p> <p>3.2.Post revenue and expense account balances to final general ledger accounts system</p> <p>3.3.Prepare final general ledger accounts to reflect gross and net profits for reporting period</p>
4. Prepare end of period financial reports	<p>4.1.Prepare <b>revenue statement</b> in accordance with organisational requirements to reflect operating profit for <b>reporting period</b></p> <p>4.2.Prepare <b>balance sheet</b> to reflect financial position of business at end of reporting period</p> <p>4.3.Identify and correct, or refer errors for resolution in accordance with organisational policy and procedures</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to clarify reporting requirements and obtain required data
- literacy skills to:
  - identify financial information
  - follow the Australian Accounting and Auditing Standards
  - follow the organisation's accounting procedures
- numeracy skills to calculate percentages, addition and subtraction.

#### Required knowledge

- double-entry bookkeeping principles
- general journal and general ledger entries
- key provisions of relevant legislation and regulations from all forms of government, standards and codes that may affect aspects of business operations, such as:
  - Australian Taxation Office regulations
  - accounting and auditing standards
  - Goods and Services Tax (GST) regulations
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - finance legislation
  - privacy laws
  - occupational health and safety
- organisational accounting systems
- organisational policies, procedures and accounting requirements.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• preparing financial reports</li> <li>• applying the Australian Accounting and Auditing Standards</li> <li>• applying double-entry principles.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to office equipment and resources, such as:</li> <li>• calculator</li> <li>• computer equipment and relevant software</li> <li>• Australian Accounting and Auditing Standards</li> <li>• access to samples of financial data</li> <li>• access to workplace reference materials such as procedural manuals and company policy.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• analysis of responses to case studies and scenarios</li> <li>• demonstration of techniques</li> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• review of authenticated documents from the workplace or training environment</li> <li>• oral or written questioning to assess knowledge of accounting procedures and techniques.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• other financial administration units.</li> </ul>

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Calculating depreciation</i></b> may include:	<ul style="list-style-type: none"> <li>• reducing balance method</li> <li>• straight-line method</li> </ul>
<b><i>Expense accounts</i></b> may include:	<ul style="list-style-type: none"> <li>• distribution expenses</li> <li>• electricity</li> <li>• freight inward and outward</li> <li>• insurance</li> <li>• interest paid</li> <li>• rates</li> <li>• rent paid</li> <li>• telephone and fax</li> <li>• wages and salaries</li> </ul>
<b><i>Revenue accounts</i></b> may include:	<ul style="list-style-type: none"> <li>• commission received</li> <li>• interest received</li> <li>• rent received</li> </ul>
<b><i>Prepayments and accruals</i></b> may include:	<ul style="list-style-type: none"> <li>• accrued expenses</li> <li>• accrued revenue</li> <li>• prepaid expenses</li> <li>• prepaid revenue</li> </ul>
<b><i>Bad and doubtful debts</i></b> may include:	<ul style="list-style-type: none"> <li>• calculating provision for doubtful debts</li> <li>• writing off bad debts against provision for doubtful debts</li> </ul>
<b><i>Inventories</i></b> may include:	<ul style="list-style-type: none"> <li>• goods for resale</li> <li>• stationery and other office supplies</li> </ul>
<b><i>Final accounts</i></b> may include:	<ul style="list-style-type: none"> <li>• profit and loss</li> <li>• trading</li> </ul>
<b><i>Revenue statement</i></b> comprises:	<ul style="list-style-type: none"> <li>• cost of goods sold if applicable</li> <li>• gross profit</li> <li>• operating net profit</li> <li>• unclassified adjusted expenses and revenue</li> </ul>
<b><i>Reporting period</i></b> may include:	<ul style="list-style-type: none"> <li>• as determined in organisational procedures</li> <li>• financial year</li> </ul>

**RANGE STATEMENT****Balance sheet** comprises:

- narrative or T format
- unclassified assets and liabilities

**Unit Sector(s)****Unit sector****Competency field****Competency field**

Finance - Financial Administration

**Co-requisite units****Co-requisite units**

## BSBFIM501A Manage budgets and financial plans

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to undertake financial management within a work team in an organisation. This includes planning and implementing financial management approaches, supporting team members whose role involves aspects of financial operations, monitoring and controlling finances, and reviewing and evaluating effectiveness of financial management processes in line with the financial objectives of the work team and the organisation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit addresses the requirement for managers to ensure that financial resources are used effectively. This is done by ensuring access to budget/s and ongoing monitoring expenditure against the budget/s.</p> <p>The unit applies to managers working in small and large business environments and not for profit organisations.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>	

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan financial management approaches	<p>1.1. Access <b><i>budget/financial plans</i></b> for the work team</p> <p>1.2. Clarify budget/financial plans with <b><i>relevant personnel</i></b> within the organisation to ensure that documented outcomes are achievable, accurate and comprehensible</p> <p>1.3. Negotiate any changes required to be made to budget/financial plans with relevant personnel within the organisation</p> <p>1.4. Prepare <b><i>contingency plans</i></b> in the event that initial plans need to be varied</p>
2. Implement financial management approaches	<p>2.1. Disseminate relevant details of the agreed budget/financial plans to team members</p> <p>2.2. Provide <b><i>support</i></b> to ensure that team members can competently perform <b><i>required roles</i></b> associated with the management of finances</p> <p>2.3. Determine and access <b><i>resources and systems</i></b> to manage financial management processes within the work team</p>
3. Monitor and control finances	<p>3.1. Implement <b><i>processes</i></b> to monitor actual expenditure and to control costs across the work team</p> <p>3.2. Monitor expenditure and costs on an agreed cyclical basis to identify cost variations and expenditure overruns</p> <p>3.3. Implement, monitor and modify contingency plans as required to maintain financial objectives</p> <p>3.4. <b><i>Report</i></b> on budget and expenditure in accordance with organisational protocols</p>
4. Review and evaluate financial management processes	<p>4.1. Collect and collate for analysis, <b><i>data and information on the effectiveness of financial management processes</i></b> within the work team</p> <p>4.2. Analyse data and information on the effectiveness of financial management processes within the work team and identify, document and recommend any improvements to existing processes</p> <p>4.3. Implement and monitor agreed improvements in line with financial objectives of the work team and the organisation</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- numeracy skills to read and understand a budget and to update a budget
- technology skills to use software associated with financial record keeping.

#### Required knowledge

- basic accounting principles
- organisational requirements related to financial management
- relevant legislation and current requirements of the Australian Taxation Office, including GST
- requirements for organisational record keeping and auditing
- principles and techniques involved in:
  - budgeting
  - cash flows
  - electronic spreadsheets
  - GST
  - ledgers and financial statements
  - profit and loss statements.

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- financial skills required to work with and interpret budgets, ageing summaries, cash flow, petty cash, GST, and profit and loss statements
- knowledge of the record keeping requirements for the ATO and for auditing purposes.

#### Context of and specific resources for assessment

Assessment must ensure:

- access to appropriate documentation and resources normally used in the workplace.

#### Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- assessment of written reports indicating broad knowledge of managing budgets and managing financial resources in the organisation
- demonstration of techniques using financial record keeping software
- direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate
- oral or written questioning to assess knowledge of requirements for organisational record keeping and auditing
- review of contingency plans
- review of identification of cost variations and expenditure overruns
- evaluation of documentation reporting on budget and expenditure
- review of documentation identifying and recommending improvements to financial management processes.

#### Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

**EVIDENCE GUIDE**

- other units from the Diploma of Management.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Budget/financial plans*** may include:

- cash flow projections
- long-term budgets/plans
- operational plans
- short-term budgets/plans
- spreadsheet-based financial projections
- targets or key performance indicators for production, productivity, wastage, sales, income and expenditure

***Relevant personnel*** may include:

- financial managers, accountants or financial controllers
- supervisors, other frontline managers

***Contingency plans*** may include:

- contracting out or outsourcing human resources and other functions or tasks
- diversification of outcomes
- finding cheaper or lower quality raw materials and consumables
- increasing sales or production
- recycling and re-using
- rental, hire purchase or alternative means of procurement of required materials, equipment and stock
- restructuring of organisation to reduce labour costs
- risk identification, assessment and management processes
- seeking further funding
- strategies for reducing costs, wastage, stock or consumables
- succession planning

***Support*** may include:

- access to specialist advice
- documentation of procedures
- help desk or identified experts within the organisation
- information briefings or sessions

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• intranet-based information</li> <li>• training including mentoring, coaching and shadowing</li> </ul>
<b>Required roles</b> may include:	<ul style="list-style-type: none"> <li>• arranging for use of corporate credit cards</li> <li>• banking</li> <li>• debt collection</li> <li>• ensuring security, accuracy and currency of financial operations</li> <li>• invoicing clients, customers and consumers</li> <li>• maintaining journals, ledgers and other record keeping systems</li> <li>• maintaining petty cash system</li> <li>• purchasing and procurement</li> <li>• wages and salaries payments and record keeping</li> </ul>
<b>Resources and systems</b> may include:	<ul style="list-style-type: none"> <li>• hardware and software</li> <li>• human, physical or financial resources</li> <li>• record keeping systems (electronic and paper-based)</li> <li>• specialist advice or support</li> </ul>
<b>Processes</b> to monitor actual expenditure and to control costs across the work team include:	<ul style="list-style-type: none"> <li>• reporting of:               <ul style="list-style-type: none"> <li>• assets</li> <li>• consumables</li> <li>• equipment</li> <li>• expenditure</li> <li>• income</li> <li>• stock</li> <li>• wastage</li> </ul> </li> </ul>
<b>Reporting</b> may include data from:	<ul style="list-style-type: none"> <li>• bank statements</li> <li>• credit card statements</li> <li>• financial reports</li> <li>• invoices and receipts</li> <li>• ledgers and journals</li> <li>• logs</li> <li>• petty cash records</li> <li>• spreadsheet-based records</li> </ul>
<b>Data and information on the effectiveness of financial management processes</b> may include records (paper-based and	<ul style="list-style-type: none"> <li>• bank account records</li> <li>• cash flow data</li> <li>• contracts</li> </ul>

**RANGE STATEMENT**

electronic) related to:

- credit card receipts
- employee timesheets
- files of paid purchase and service invoices
- income and expenditure
- insurance reports
- invoices
- job costings
- petty cash receipts
- quotations
- taxation records
- wages/salaries books

**Unit Sector(s)**

Unit sector

**Competency field**

Competency field

Management and Leadership - Management

**Co-requisite units**

Co-requisite units

## BSBFLM312C Contribute to team effectiveness

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This specifies the outcomes required to by frontline managers to contribute to the effectiveness of the work team. It involves planning with the team to meet expected outcomes, developing team cohesion, participating in and facilitating the work team, and communicating with the management of the organisation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Frontline managers have a key role in developing efficient and effective work teams within the context of the organisation. They play a prominent part in motivating, mentoring, coaching and developing team cohesion by providing leadership for the team and forming the bridge between the management of the organisation and the team members.</p> <p>At this level, work will normally be carried out within known routines, methods and procedures, and may also involve a number of complex or non routine activities that require some discretion and judgement.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to team outcomes	<p>1.1.Consult team members to identify <b><i>team purpose, roles, responsibilities, goals, plans and objectives</i></b></p> <p>1.2.Support team members to meet expected outcomes</p>
2. Support team cohesion	<p>2.1.Encourage team members to participate in the planning, decision making and operational aspects of the work team to their level of responsibility</p> <p>2.2.Encourage team members to take responsibility for their own work and to assist each other in undertaking required roles and responsibilities</p> <p>2.3.Provide <b><i>feedback</i></b> to team members to encourage, value and reward team members' efforts and contributions</p> <p>2.4.Identify and address issues, concerns and problems identified by team members to <b><i>relevant persons</i></b> as required</p>
3. Participate in work team	<p>3.1.Actively encourage and support team members to participate in team activities and communication processes and to take <b><i>responsibility for their actions</i></b></p> <p>3.2.Support the team to identify and resolve problems which impede its performance</p> <p>3.3.Utilise own contribution to work team to serve as a role model for others and enhance the organisation's image within the work team, the organisation and with clients/customers</p>
4. Communicate with management	<p>4.1.Maintain open <b><i>communication</i></b> with <b><i>line manager/management</i></b> at all times</p> <p>4.2.Communicate information from line manager/management to the team</p> <p>4.3.Communicate <b><i>unresolved issues</i></b> to line manager/management and follow-up to ensure action is taken in response to these matters</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

##### Required skills

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- communication skills, including listening
- basic training skills, including mentoring and coaching
- planning and organising skills
- problem solving skills
- attributes:
  - empathic
  - communicative
  - self aware
  - supportive
  - trusting
  - open
  - flexible
  - accommodating
  - initiating
  - loyal
  - fair
  - adaptable

#### Required knowledge

##### Required knowledge

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- organisational policies and procedures
- organisational goals, objectives and plans at both tactical and strategic levels
- organisational structure including organisational chart
- learning and development options available within and through organisation
- a general understanding of the principles and techniques of:
  - group dynamics and processes
  - motivation
  - planning

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
<ul style="list-style-type: none"><li>• negotiation</li><li>• individual behaviour and difference</li></ul>

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• demonstrate leadership in contributing to team plans</li> <li>• lead and facilitate teamwork</li> <li>• actively communicate with management</li> <li>• manage communication within the team</li> <li>• induct new team members</li> <li>• implement performance management system</li> <li>• handle problems</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• that this unit can be assessed in the workplace or in a closely simulated work environment</li> <li>• access by the learner and trainer to appropriate documentation and resources normally used in the workplace</li> <li>• where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment</li> <li>• that examples of actions taken by candidate to contribute to team effectiveness are provided</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• Direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• Records produced from working in a team, such as:             <ul style="list-style-type: none"> <li>• reports</li> <li>• minutes or records of meetings</li> <li>• work journals or diaries</li> <li>• learning and development plans developed with team members</li> <li>• records of actions taken to address issues raised</li> </ul> </li> </ul>

<b>EVIDENCE GUIDE</b>	
	by team members
<b>Guidance information for assessment</b>	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Legislation, codes and national standards relevant to the workplace may include:	<ul style="list-style-type: none"> <li>• award and enterprise agreements and relevant industrial instruments</li> <li>• relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal opportunity, industrial relations and anti-discrimination</li> <li>• relevant industry codes of practice</li> </ul>
OHS considerations may include:	<ul style="list-style-type: none"> <li>• provision of information about OHS legislative requirements, guidelines and the organisation's OHS policies, procedures and programs</li> <li>• training of all employees in health and safety procedures</li> <li>• participation in the regular update of OHS systems and procedures</li> <li>• changes to work practices, procedures and the working environment which impact on OHS</li> </ul>
<b><i>Team purpose, roles, responsibilities, goals, plans and objectives</i></b> may include:	<ul style="list-style-type: none"> <li>• goals for individuals and the work team</li> <li>• expected outcomes and outputs</li> <li>• individual and team performance plans and Key Performance Indicators (KPIs)</li> <li>• action plans, business plans and operational plans linked to strategic plans</li> <li>• OHS responsibilities</li> </ul>
<b><i>Feedback</i></b> may refer to:	<ul style="list-style-type: none"> <li>• communication of ideas and thoughts which focus on specific tasks, outcomes, decisions, issues or behaviours</li> <li>• formal/informal gatherings between team members where there is discussion on work-related matters</li> </ul>
<b><i>Relevant persons</i></b> may include:	<ul style="list-style-type: none"> <li>• frontline manager's direct superior or other management representatives</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• colleagues</li> <li>• designated personnel e.g. safety officer</li> </ul>
<i>Responsibility for their actions</i> may involve:	<ul style="list-style-type: none"> <li>• individuals and teams</li> <li>• individual and joint actions</li> </ul>
<i>Communication</i> may include:	<ul style="list-style-type: none"> <li>• verbal, written or electronic communication</li> <li>• face-to-face</li> <li>• formal/informal interaction</li> </ul>
<i>Line manager/management</i> may refer to:	<ul style="list-style-type: none"> <li>• frontline manager's direct superior or other management representatives</li> </ul>
<i>Unresolved issues</i> may include:	<ul style="list-style-type: none"> <li>• issues, concerns and tensions</li> <li>• problems related to work roles and responsibilities</li> <li>• grievances and complaints</li> <li>• any matters affecting workplace relationships and team cohesion</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Management and Leadership - Frontline Management services
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## Co-requisite units

<b>Co-requisite units</b>		



## BSBFRA403B Manage relationship with franchisor

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to manage the business relationship with the franchisor and oneself as the franchisee.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to franchisees who need to develop good working relationships with their franchisor within the Franchising Code of Conduct.</p> <p>BSBFRA504B Manage relationships with franchisees, is the relevant unit for franchisors.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish relationship with franchisor	<p>1.1. Identify the <i>franchisor's representative/s or liaison person/s</i></p> <p>1.2. Identify <i>communication channels</i> with the franchisor's representative/s or liaison person/s</p> <p>1.3. Establish <i>schedule of contact</i> with the franchisor's representative/s or liaison person/</p> <p>1.4. Hold initial meeting with the franchisor's representative/s or liaison person/s to initiate ongoing relationship</p> <p>1.5. Ensure participation in the franchisee advisory council meetings and relevant activities</p>
2. Determine services available from franchisor	<p>2.1. Consult with the franchisor's representative/s or liaison person/s to determine the range of <i>services available through the franchisor</i></p> <p>2.2. Establish schedule for accessing services of the franchisor</p> <p>2.3. Access services available through the franchisor according to schedule and as needs arise in the course of business operations</p> <p>2.4. Maintain currency of information relating to services available through the franchisor</p>
3. Implement strategies for meeting franchisor financial obligations	<p>3.1. Identify <i>franchisee financial obligations</i> to the franchisor</p> <p>3.2. Develop and implement strategies and procedures to meet franchisee financial obligations</p> <p>3.3. Undertaken planning to facilitate <i>ongoing management of franchise</i></p>
4. Resolve disputes with franchisor	<p>4.1. Identify disputes with the franchisor and enter into negotiations with the franchisor's representative/s or liaison person/s in line with complaints handling procedure as described in the Franchising Code of Conduct</p> <p>4.2. Seek assistance of third parties or mediators to facilitate resolution of disputes arising with the franchisor and in line with the complaints handling procedure</p> <p>4.3. Resolve disputes and document courses of agreed action</p> <p>4.4. Implement agreed courses of action to resolve disputes</p>

ELEMENT	PERFORMANCE CRITERIA
	4.5. Use lessons learned from disputes to guide future business operations and to facilitate positive relationships with the franchisor

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities
- communication and negotiation skills to resolve disputes
- problem-solving skills to address disputes arising in the course of business operations.

#### Required knowledge

- occupational health and safety (OHS) requirements:
  - specific to nature and type of franchise
  - generic to all workplaces
  - specific to own safety such as manual handling
- legislation, codes of practice and national standards, for example:
  - Franchising Code of Conduct
  - legislation covering fire safety, OHS, employment of staff, company law, anti-discrimination and fair trading
  - required permits (under commonwealth, state/territory and local government regulations and legislation)
- franchise specific obligations as per franchise agreement, specifically financial obligations.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• implementing processes to manage the relationship between franchisor and self</li> <li>• identifying and resolving disputes</li> <li>• financial planning to meet franchisor requirements</li> <li>• knowledge of relevant legislation, codes of practice and national standards.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to business documentation</li> <li>• access to feedback from franchisor</li> <li>• access to an actual workplace or simulated environment</li> <li>• access to equipment and resources.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• evaluation of strategies and procedures implemented to meet franchisee financial obligations</li> <li>• analysis of responses to case studies and scenarios</li> <li>• observation of presentations</li> <li>• oral or written questioning to assess knowledge of franchising arrangements</li> <li>• review of documented courses of agreed action taken to resolve disputes.</li> </ul>
<b>Guidance information for assessment</b>	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Franchisor's representative/s or liaison person/s</i></b> may include:	<ul style="list-style-type: none"> <li>• franchisor's appointed representative</li> <li>• specialist personnel within franchisor organisation including financial advisers, training personnel and marketing advisers</li> </ul>
<b><i>Communication channels</i></b> may include:	<ul style="list-style-type: none"> <li>• email address</li> <li>• meeting schedules</li> <li>• mobile and office based telephone numbers</li> <li>• other emergency contact channels</li> <li>• pager number</li> <li>• workshops for franchisees</li> </ul>
<b><i>Schedule of contact</i></b> may include:	<ul style="list-style-type: none"> <li>• occasional visits</li> <li>• regular meetings</li> <li>• training schedules and franchisee network meetings</li> <li>• visits by representative/s</li> </ul>
<b><i>Services available through the franchisor</i></b> may include:	<ul style="list-style-type: none"> <li>• equipment repair and replacement</li> <li>• financial advice</li> <li>• IT support</li> <li>• market intelligence</li> <li>• marketing and promotional activities</li> <li>• product updates</li> <li>• purchasing of stock</li> <li>• training programs</li> </ul>
<b><i>Franchisee financial obligations</i></b> may include:	<ul style="list-style-type: none"> <li>• payment schedules</li> <li>• fixed price</li> <li>• percentage of turnover</li> <li>• percentage of income</li> </ul>
<b><i>Ongoing management of franchise</i></b> may include:	<ul style="list-style-type: none"> <li>• planning for life of agreement</li> <li>• planning for extinction of agreement</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Management and Leadership - Franchising
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**Co-requisite units**

<b>Co-requisite units</b>		

## BSBHRM405A Support the recruitment, selection and induction of staff

### Modification History

Release	Comments
Release 1	<p>This version first released with <i>BSB07 Business Services Training Package Version 8.0</i>.</p> <p>Replaces BSBHRM402A Recruit, select and induct staff.</p>

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to execute tasks associated with the recruitment cycle. Performance of the work described in this unit will be underpinned by in-depth knowledge of the work of the organisation, and how recruitment and selection practices fit with other human resources functions.

### Application of the Unit

This unit applies to those with a supporting role in recruitment, selection and induction functions who work under the direction of a human resources manager.

Individuals at this level would not necessarily have staff reporting to them, although this may be the case.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Not applicable.

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Plan for recruitment	<p>1.1 Obtain approval to fill position and clarify time lines and requirement for appointment</p> <p>1.2 Assist in preparing <i>job descriptions</i> that accurately reflect the role requirements, according to organisational <i>policies</i> and procedures and <i>legislation, codes, national standards</i> and <i>workplace health and safety (WHS) considerations</i></p> <p>1.3 Consult with relevant personnel about job descriptions and <i>workforce strategy</i></p> <p>1.4 Assist in ensuring that job descriptions comply with legislative requirements and reflect the organisation's requirements for a diverse workforce</p> <p>1.5 Obtain approvals to advertise position</p>
2. Plan for selection	<p>2.1 Choose appropriate <i>channels and technology</i> to advertise vacancies and/or identify potential talent pool</p> <p>2.2 Advertise vacancies for <i>staffing requirements</i> according to organisational policies and procedures</p> <p>2.3 Consult with relevant personnel to convene selection panel and develop interview questions</p> <p>2.4 Assist in ensuring that interview questions comply with legislative requirements</p> <p>2.5 Assist in short-listing applicants</p> <p>2.6 Schedule interviews and advise relevant people of times, dates and venues</p>
3. Support selection process	<p>3.1 Participate in interview process and assess candidates against agreed selection criteria</p> <p>3.2 Discuss assessment with other selection panel members</p> <p>3.3 Correct biases and deviations from agreed procedures and negotiate for preferred candidate</p> <p>3.4 Contact referees for referee reports</p> <p>3.5 Prepare selection report and make recommendations to senior personnel for appointment</p> <p>3.6 Advise unsuccessful candidates of outcomes and respond to any queries</p> <p>3.7 Secure preferred candidate's agreement</p> <p>3.8 Complete necessary documentation according to organisational procedures, observing confidentiality and privacy requirements</p>

4. Induct successful candidate	<p>4.1 Provide successful candidate with employment contract and other documentation</p> <p>4.2 Advise manager and work team of new appointment</p> <p>4.3 Advise managers and staff of candidate's starting date and make necessary administrative arrangements for pay and employee record keeping</p> <p>4.4 Arrange successful candidate's <i>induction</i> according to organisational policy</p>
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## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- communication skills to:
  - use networks to source suitable applicants
  - actively listen to what is being said in interviews
  - advise on the outcomes of the selection process
  - support line managers in recruitment and selection functions
- literacy skills to:
  - work with job descriptions to devise suitable questions for interviews
  - make job offers and prepare letters for unsuccessful applicants
  - review legislation to ensure requirements are reflected in job descriptions
- organising and scheduling skills to arrange interviews and venues
- technology skills to:
  - advertise jobs
  - communicate with applicants and new appointments
  - maintain information in the human resources information system.

### Required knowledge

- documentation required for recruitment, selection and induction
- human resources functions, human resources life cycle and the place of recruitment and selection in that life cycle
- principles of equity and diversity and relevant legislation
- range of interviewing techniques and other selection processes and their application.

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• work with job descriptions to support sourcing, selecting and appointing suitable staff</li> <li>• participate in interviews and other selection techniques, and demonstrate awareness of EEO and anti-discrimination requirements</li> <li>• use different advertising channels to promote vacancies and/or establish a potential talent pool.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an appropriate range of documentation and resources normally used in the workplace.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• analysis of responses to case studies and scenarios</li> <li>• assessment of reports on recruitment and selection</li> <li>• demonstration of selection techniques</li> <li>• direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate</li> <li>• observation of interviewing techniques</li> <li>• review of job description and advertisements for staffing vacancies</li> <li>• review of documentation provided to successful candidate</li> <li>• oral or written questioning to assess knowledge of selection processes.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• other units from the Certificate IV in Human Resources.</li> </ul>



## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>Job descriptions</i></b> may include:	<ul style="list-style-type: none"> <li>• attributes</li> <li>• competencies required by staff</li> <li>• job or person specifications</li> <li>• job title and purpose of position</li> <li>• necessary skills and knowledge</li> <li>• required qualifications</li> <li>• selection criteria</li> <li>• tasks or duties associated with the position.</li> </ul>
<b><i>Policies</i></b> may include:	<ul style="list-style-type: none"> <li>• anti-discrimination</li> <li>• diversity</li> <li>• equal employment opportunity (EEO)</li> <li>• privacy and confidentiality.</li> </ul>
<b><i>Legislation, codes and national standards</i></b> may include:	<ul style="list-style-type: none"> <li>• award and enterprise agreements, and relevant industrial instruments</li> <li>• relevant industry codes of practice</li> <li>• relevant legislation from all levels of government that affects business operation, especially in regard to WHS and environmental issues, EEO, industrial relations and anti-discrimination.</li> </ul>
<b><i>Workplace health and safety considerations</i></b> may include:	<ul style="list-style-type: none"> <li>• establishing and maintaining WHS training, records and induction processes</li> <li>• performance against WHS legislation and organisation's WHS system, especially policies, procedures and work instructions.</li> </ul>
<b><i>Workforce strategies</i></b> may include:	<ul style="list-style-type: none"> <li>• targets for specific groups to ensure workforce diversity in, for example: <ul style="list-style-type: none"> <li>• age</li> <li>• ethnicity</li> <li>• experience</li> <li>• gender</li> <li>• other forms of differences, such as learning styles, personality types, working styles, etc.</li> </ul> </li> <li>• targets for specific qualifications, capabilities or attributes</li> <li>• recruiting for new strategic directions.</li> </ul>
<b><i>Channels and</i></b>	<ul style="list-style-type: none"> <li>• government job search agencies</li> </ul>

<b><i>technology</i></b> may include:	<ul style="list-style-type: none"><li>• industry-specific websites and journals</li><li>• internal communications, such as newsletters, intranet and emails</li><li>• newspaper advertisements</li><li>• recruitment agencies</li><li>• recruitment websites</li><li>• social media sites.</li></ul>
<b><i>Staffing requirements</i></b> may include:	<ul style="list-style-type: none"><li>• casual, permanent or temporary</li><li>• full-time or part-time.</li></ul>
<b><i>Induction</i></b> may include:	<ul style="list-style-type: none"><li>• initial orientation of new employee</li><li>• initial training of new employee to meet the requirements of the position.</li></ul>

## Unit Sector(s)

Workforce Development – Human Resource Management

## BSBHRM505B Manage remuneration and employee benefits

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to implement an organisation's remuneration and benefit plans. It incorporates all functions associated with remuneration, including packaging, salary benchmarking, market rate reviews, bonuses and the legislative aspects of remuneration and employee benefits.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to human resources managers responsible for overseeing an organisation's remuneration process.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop organisation's remuneration strategy	<p>1.1. Analyse strategic and operational plans to determine the scope of <b>remuneration and benefits</b> plans</p> <p>1.2. Undertake research on current practice, recent developments and legislative parameters for the remuneration strategy</p> <p>1.3. Develop options for consideration by relevant managers</p> <p>1.4. Present options showing the link to organisational strategic objectives</p> <p>1.5. Ensure remuneration policies and incentive plans are agreed and recorded</p> <p>1.6. Ensure that organisation is positioned as an <b>employer of choice</b> and regarded as a desirable workplace</p>
2. Implement remuneration strategy	<p>2.1. Research occupational groups to determine those which are industrial agreement based</p> <p>2.2. Access or undertake <b>market rates surveys</b> regularly to ensure the organisation's required level of competitiveness for particular occupational groups is maintained</p> <p>2.3. Align remuneration and benefits plans with performance management system</p> <p>2.4. Ensure that employees receive at least their minimum entitlements according to organisational policies and legal requirements</p> <p>2.5. Ensure <b>salary packages</b> comply with organisational policies and legal requirements, including fringe benefits tax (FBT) and superannuation</p> <p>2.6. Ensure <b>incentive arrangements</b>, if included, comply with the organisation's remuneration strategy</p>
3. Review and update remuneration strategy	<p>3.1. Consult managers and employees about the effectiveness of the remuneration strategy</p> <p>3.2. Amend strategy and plans as necessary to meet organisational policies and legal requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- interpersonal skills to:
  - communicate sensitively about remuneration
  - observe confidentiality
- numeracy and technology skills to:
  - calculate costs to the organisation
  - graph salary costs
  - link salaries to budgets
- research skills to determine appropriate models of remuneration and benefits for particular occupational groups and individuals

#### Required knowledge

- award structures for industrial agreements
- ethical practices relating to remuneration and benefits strategies
- leasing arrangements, including novated leases
- models for bonus and incentive schemes, including gain sharing or profit sharing
- relevant legislation, for example equal employment opportunity, diversity and anti-discrimination legislation
- remuneration principles or models and strategies
- requirements of the Australian Taxation Office in relation to income tax, superannuation reporting, FBT and bonus payments.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• compliance with the legal aspects of managing remuneration and benefits</li> <li>• application of remuneration strategies for different occupational groups and circumstances</li> <li>• application of awards and agreements to structure remuneration processes</li> <li>• application of the requirements of the Australian Taxation Office in relation to income tax, superannuation reporting, FBT and bonus payments.</li> </ul>
<b>Context of and specific resources for assessment</b>	Assessment must ensure access to appropriate documentation and resources normally used in the workplace.
<b>Method of assessment</b>	<p>The following assessment methods are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• assessment of reports on remuneration models and approaches</li> <li>• direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate</li> <li>• review of research undertaken on current practice, recent developments and legislative parameters for the remuneration strategy</li> <li>• review of remuneration options developed for consideration by relevant managers</li> <li>• oral or written questioning to assess knowledge of legislation and the taxation system.</li> </ul>
<b>Guidance information for assessment</b>	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Remuneration and benefits</i></b> may include:	<ul style="list-style-type: none"> <li>• allowances</li> <li>• annual leave</li> <li>• bonuses or incentives</li> <li>• competency-based progression</li> <li>• employee share plans</li> <li>• ex gratia payments</li> <li>• expense reimbursement</li> <li>• family and carer's leave</li> <li>• flexible work arrangements</li> <li>• fringe benefits</li> <li>• leave without pay</li> <li>• long service leave</li> <li>• motor vehicle</li> <li>• salaries and wages</li> <li>• share options</li> <li>• sick leave</li> <li>• special leave</li> <li>• study leave</li> <li>• superannuation.</li> </ul>
<b><i>Employer of choice</i></b> may include:	<ul style="list-style-type: none"> <li>• ability to attract and retain high performing staff</li> <li>• flexible and inclusive work environment supported by the chief executive officer and managers</li> <li>• policies and practices that discourage harassment or discrimination</li> <li>• reputation for good workplace relationships, a culture of trust and good pay and conditions</li> <li>• reputation for being fair, flexible, innovative and engendering employee engagement</li> <li>• training and development programs that encourage people to plan and follow a career pathway.</li> </ul>
<b><i>Market rate surveys</i></b> may include:	<ul style="list-style-type: none"> <li>• data from remuneration specialists</li> <li>• general community surveys</li> <li>• industry salary benchmarking</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• surveys conducted by the organisation.</li> </ul>
<i>Salary packages:</i>	<ul style="list-style-type: none"> <li>• may include payment arrangement where the total remuneration and benefits payable to an employee are calculated as total cost of employment, including:               <ul style="list-style-type: none"> <li>• salary</li> <li>• allowances</li> <li>• motor vehicle</li> <li>• superannuation</li> <li>• fringe benefits</li> </ul> </li> <li>• do not include payroll tax or workers compensation insurance.</li> </ul>
<i>Incentive arrangements</i> may include:	<ul style="list-style-type: none"> <li>• commission</li> <li>• bonuses</li> <li>• share plans</li> <li>• share options</li> <li>• gain sharing</li> <li>• profit sharing.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Workforce development - human resource management
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## Co-requisite units

<b>Co-requisite units</b>		



## BSBINM202A Handle mail

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to receive and distribute incoming mail, and to collect and despatch outgoing mail.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who perform a range of routine tasks in the workplace, using a limited range of practical skills and fundamental knowledge of mail handling in a defined context, under direct supervision or with limited individual responsibility.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Receive and distribute incoming mail	<p>1.1.Ensure that <i>incoming mail</i> is <i>checked</i> and <i>registered</i> in accordance with organisational policies and procedures</p> <p>1.2.Identify titles and locations of company personnel and departments</p> <p>1.3.Identify and <i>distribute urgent and confidential mail</i> in accordance with organisational requirements</p> <p>1.4.<i>Sort</i> and despatch mail to <i>nominated person/location</i> in accordance with organisational requirements</p> <p>1.5.Record and/or report <i>damaged, suspicious or missing items</i> and take <i>appropriate action</i> in accordance with organisational policies and procedures</p>
2. Collect and despatch outgoing mail	<p>2.1.Collect, check and sort outgoing mail to ensure all items are <i>correctly prepared for despatch</i> in accordance with organisational policies and procedures</p> <p>2.2.<i>Record</i> and <i>process</i> outgoing <i>mail for despatch</i> in accordance with <i>organisational requirements</i></p> <p>2.3.Despatch mail to meet designated time lines</p>
3. Organise urgent and same day deliveries	<p>3.1.Evaluate <i>delivery options</i> and select <i>best option</i></p> <p>3.2.Prepare items for urgent delivery in accordance with organisational requirements and carrier specifications</p> <p>3.3.Organise lodgement or pick up of emergency deliveries and follow-up if necessary</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to receive instructions of several steps to complete task, to give information to others, and to consult with or question supervisor and peers to clarify information
- literacy skills to keep records, to check accuracy of written material and to follow policies and procedures
- numeracy skills to check weights and addresses; and to sort, collate and estimate time for mail despatches and bulk mail outs
- problem-solving skills to choose appropriate method for urgent delivery
- technology skills to use electronic mail.

#### Required knowledge

- Australian geography and postal codes
- key provisions of relevant legislation from all forms of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- organisational policies and procedures specific to handling electronic mailprocedural requirements for receiving/despatching and prioritising correspondence
- range of mail services available.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• working with a variety of incoming and outgoing mail</li> <li>• applying carriers' and organisational requirements (e.g. postal and courier)</li> <li>• knowledge of relevant legislation.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to office equipment and resources</li> <li>• examples of correspondence and parcels for sorting and despatch.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• review of incoming and outgoing mail registers</li> <li>• analysis of responses to case studies and scenarios</li> <li>• demonstration of techniques</li> <li>• oral or written questioning to assess knowledge of procedural requirements for receiving/despaching and prioritising correspondence.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• general administration units</li> <li>• other information management units.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Incoming mail</i></b> may include:	<ul style="list-style-type: none"> <li>• confidential/personal</li> <li>• electronic (e.g. faxes, emails to central address)</li> <li>• external</li> <li>• internal</li> <li>• journals/magazines</li> <li>• letters</li> <li>• paper-based</li> <li>• urgent</li> <li>• other forms of correspondence</li> </ul>
<b><i>Checking mail</i></b> may include:	<ul style="list-style-type: none"> <li>• enclosures</li> <li>• mail marked confidential, urgent or personal</li> <li>• mail sent express post or registered</li> <li>• mail that has been damaged</li> <li>• mail that looks suspicious</li> </ul>
<b><i>Registering mail</i></b> may include:	<ul style="list-style-type: none"> <li>• assigning file number</li> <li>• addressee</li> <li>• condition of mail item (e.g. damaged, no return address)</li> <li>• contents e.g. cheque</li> <li>• date received</li> <li>• sender</li> <li>• subject</li> </ul>
<b><i>Distributing urgent and confidential mail</i></b> may include:	<ul style="list-style-type: none"> <li>• immediate, hand delivery, express post, registered</li> <li>• separating and prioritising urgent mail</li> </ul>
<b><i>Sorting mail</i></b> may include:	<ul style="list-style-type: none"> <li>• adding a circulation slip</li> <li>• separating by order of importance for each individual</li> <li>• separating internal (organisational) mail and external mail</li> <li>• separating junk mail</li> <li>• separating urgent mail to be distributed first</li> <li>• sorting by departments</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• sorting by location</li> <li>• sorting by seniority of personnel</li> <li>• sorting invoices, cheques and accounts</li> </ul>
<i>Nominated person/location</i> may include:	<ul style="list-style-type: none"> <li>• administrative support person</li> <li>• department</li> <li>• individual addressee</li> </ul>
<i>Damaged, suspicious or missing items</i> may include:	<ul style="list-style-type: none"> <li>• mail exposed to weather (e.g. water damage from rain)</li> <li>• mail roughly handled (e.g. broken contents, torn address labels)</li> <li>• mail that looks like it has been interfered with (re-sealed mail)</li> <li>• mail that looks unusual</li> <li>• mail that makes noises</li> <li>• mail that smells strange</li> <li>• pilfered mail (contents may be missing, parcels slit open)</li> </ul>
<i>Appropriate action</i> in relation to damaged, missing or suspicious items may include:	<ul style="list-style-type: none"> <li>• immediately calling supervisor or security staff</li> <li>• contacting sender to ensure everything sent was received</li> <li>• filling out forms for sender's insurance company</li> <li>• negotiating replacement of missing or damaged items with sender</li> <li>• not touching or moving suspicious mail</li> </ul>
<i>Correctly preparing items for despatch</i> may include:	<ul style="list-style-type: none"> <li>• checking enclosures</li> <li>• checking letter and envelope are addressed to same person</li> <li>• checking the address is not obscured</li> <li>• checking letter has been signed</li> <li>• checking return address is included</li> <li>• checking address details and layout are correct</li> <li>• determining most appropriate carrier</li> <li>• ensuring correct requirements for chosen carrier are being followed</li> <li>• preparing bulk mail outs</li> </ul>
<i>Recording</i> outgoing mail may include:	<ul style="list-style-type: none"> <li>• electronic (specialist software, database, spreadsheet systems)</li> <li>• paper-based (mail book, form, file)</li> </ul>
<i>Processing mail for despatch</i> may	<ul style="list-style-type: none"> <li>• calculating and paying for postage</li> </ul>

<b>RANGE STATEMENT</b>	
include:	<ul style="list-style-type: none"> <li>• DX mail</li> <li>• registering mail</li> </ul>
<i>Processing</i> in accordance with <i>organisational requirements</i> may include:	<ul style="list-style-type: none"> <li>• addressee/organisation</li> <li>• appropriate carrier (courier, normal mail, express post)</li> <li>• date of despatch</li> <li>• receipts attached where appropriate</li> <li>• reference number</li> <li>• sender</li> <li>• sender's department</li> </ul>
<i>Delivery options</i> may include:	<ul style="list-style-type: none"> <li>• courier</li> <li>• express mail</li> <li>• overnight bag</li> </ul>
<i>Best option</i> may include:	<ul style="list-style-type: none"> <li>• cost</li> <li>• delivery location</li> <li>• nature of contents (bulky, fragile, confidential)</li> <li>• quantity of delivery items</li> <li>• time constraints</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Knowledge Management - Information Management
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## Co-requisite units

<b>Co-requisite units</b>	



## BSBINN301A Promote innovation in a team environment

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to be an effective and pro active member of an innovative team.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies individuals who play a pro active role in demonstrating, encouraging or supporting innovation in a team environment. The individual may be a team participant or a team leader.</p> <p>The team may 'make itself' or be constructed by others. It may have core members and members who participate at certain times or for particular purposes. It may be permanent or temporary, or come together at different times to work on specific projects.</p> <p>The team could consist of a team of contractors/freelancers, permanent staff, clients and service providers, or any combination of these groups. It may operate within an organisation or across several organisations - or simply across a group of individuals.</p> <p>The key focus of the unit is on what makes for an innovative team, what keeps it working well, how the structure of work can make a difference and what skills and knowledge are needed to maximise opportunities for innovation. Where a greater focus on team leadership is required this unit should be combined with units such as BSBLED401A Develop teams and individuals.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Create opportunities to maximise innovation within the team	1.1. Evaluate and reflect on <i>what the team needs and wants to achieve</i> 1.2. Check out <i>information about current or potential team members' work</i> in the context of developing a more innovative team 1.3. Bring people into the team or make suggestions for team members based on what needs to be achieved and the potential for cross-fertilising ideas 1.4. Acknowledge, respect and discuss the <i>different ways that different people may contribute</i> to building or enhancing the team
2. Organise and agree effective ways of working	2.1. Jointly establish <i>ground rules</i> for how the team will operate 2.2. Agree and communicate responsibilities in ways that encourage and reinforce <i>team-based innovation</i> 2.3. Agree and share tasks and activities to ensure the best use of skills and abilities within the team 2.4. Plan and schedule activities to allow time for thinking, challenging and collaboration 2.5. Establish personal reward and stimulation as an integral part of the team's way of working
3. Support and guide colleagues	3.1. Model <i>behaviour that supports innovation</i> 3.2. Seek <i>external stimuli and ideas</i> to feed into team activities 3.3. Pro-actively share information, knowledge and experiences with other team members 3.4. Challenge and test ideas within the team in a positive and collaborative way 3.5. Pro-actively discuss and explore ideas with other team members on an ongoing basis
4. Reflect on how the team is working	4.1. De-brief and reflect on activities and on opportunities for improvement and innovation 4.2. Gather and use feedback from within and outside the team to generate discussion and debate 4.3. Discuss the <i>challenges of being innovative</i> in a constructive and open way 4.4. Take ideas for improvement, build them into future activities and communicate key issues to relevant colleagues 4.5. Identify, promote and celebrate successes and

ELEMENT	PERFORMANCE CRITERIA
	examples of successful innovation

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to work collaboratively as part of a team, to provide guidance and support to others, and to participate in open and constructive discussions
- creative thinking skills to generate, explore, test and challenge ideas
- learning skills to stretch boundaries of own knowledge and skills
- literacy skills to analyse a wide range of information from varied sources
- planning and organisational skills to participate in the effective allocation of work in a team context
- problem-solving skills to work constructively to overcome issues and challenges of both a practical and conceptual nature and to make ideas become realities
- self-management skills to take a pro-active team role and to reflect on own performance in modelling and encouraging behaviour that supports innovation.

#### Required knowledge

- barriers to innovation that can occur within a team and broader barriers that sometimes hinder innovation
- broad concepts of innovation including what innovation is, different types of innovation and the benefits of innovation
- characteristics of teams that are more likely to be innovative and characteristics of broader environments that support and encourage innovation
- different roles that people may play within a team, how this impacts on the way a team works and what it might achieve
- group dynamics in a team.

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- active participation in a team where the team takes a pro-active and considered approach to innovation and innovative practice
- collaborative and open communication within the team
- knowledge and understanding of the internal and external factors that contribute to a team becoming and remaining innovative.

#### Context of and specific resources for assessment

Assessment must ensure:

- demonstration of skills as part of a team.

#### Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate
- direct observation of team interactions
- evaluation of reports by the candidate or the team (could be oral or written) discussing the ideas, challenges and opportunities associated with teams, and how they can be more innovative
- evaluation of feedback from other people in the team about the candidate's communication approaches and abilities
- oral or written questioning to assess knowledge of the characteristics of innovative teams, innovation concepts more broadly and the ways in which innovation can be encouraged
- review of jointly established 'groundrules' for how the team will operate.

#### Guidance information for assessment

Innovation does not occur in isolation. Holistic assessment with other units relevant to the industry sector, workplace and job role is highly recommended.



## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***What the team needs and wants to achieve*** may relate to:

- addressing particular customer feedback
- conceiving and implementing a particular project
- developing new services or products
- generating ongoing ideas within the work unit
- improving budgetary performance
- improving or changing work conditions
- new ideas that impact beyond the workplace (e.g. that have a broader social or community impact)

***Information about current or potential team members' work*** may relate to:

- interests
- lifestyle preferences
- past jobs
- technical strengths
- work preferences
- working styles

***Different ways that different people may contribute*** may relate to individual strengths around:

- creating positive energy within the team
- fundamental literacy strengths (e.g. particularly strong in visual literacy, written or spoken communication)
- generating ideas
- networks or spheres of influence
- particular ways of thinking
- powers of persuasion
- problem-solving capacities
- specific technical skills or knowledge

***Ground rules*** may relate to:

- boundaries or lack of boundaries for team activities and ideas
- confidentiality
- copyright, moral rights or intellectual property
- regularity of communication
- key roles and responsibilities
- time lines

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>ways of communicating</li> </ul>
<i>Team-based innovation</i> may be encouraged through:	<ul style="list-style-type: none"> <li>accessing training and learning opportunities</li> <li>enough but not too much guidance and structure</li> <li>equitable sharing of workload</li> <li>follow-through with ideas</li> <li>supportive communication</li> </ul>
<i>Behaviour that supports innovation</i> may include being:	<ul style="list-style-type: none"> <li>collaborative</li> <li>equitable</li> <li>fair</li> <li>fun</li> <li>hardworking</li> <li>reflective</li> <li>responsible</li> <li>sympathetic</li> </ul>
<i>External stimuli and ideas</i> might be from:	<ul style="list-style-type: none"> <li>Australia or overseas</li> <li>colleagues outside of the team</li> <li>family and friends</li> <li>internet</li> <li>journals</li> <li>networks or technical experts</li> <li>other organisations</li> </ul>
<i>Challenges of being innovative</i> may relate to:	<ul style="list-style-type: none"> <li>budgetary or other resource constraints</li> <li>competing priorities</li> <li>organisational culture</li> <li>problems with breaking old patterns of behaviour or thinking</li> <li>time pressures</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

Competency field	Creativity and Innovation - Innovation
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## Co-requisite units

Co-requisite units		

## BSBINN502A Build and sustain an innovative work environment

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to create an environment that enables and supports the application of innovative practice.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals working in leadership or management roles in any industry or community context. The individual could be employed by the organisation, but may also be an external contractor, the leader of a cross organisation team or of a self formed team of individuals. The work group could be permanent or temporary in nature.</p> <p>The unit focuses on the skills and knowledge required to develop and implement a holistic approach to the integration of innovation across all areas of work practice. It also acknowledges the importance of wider contextual evaluation for potential innovations to ensure their value and benefit.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>	

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Lead innovation by example	<p>1.1. Make innovation an integral part of <b><i>leadership and management activities</i></b></p> <p>1.2. Demonstrate positive reception of ideas from others and provide constructive advice</p> <p>1.3. Establish and maintain relationships based on mutual respect and trust</p> <p>1.4. Take considered <b><i>risks</i></b> to open up opportunities for innovation</p> <p>1.5. Regularly evaluate own approaches for consistency with the wider organisational or project context</p>
2. Establish work practices that support innovation	<p>2.1. Consult on and establish <b><i>working conditions</i></b> that reflect and encourage innovative practice</p> <p>2.2. Introduce and maintain <b><i>workplace procedures</i></b> that foster innovation and allow for rigorous <b><i>evaluation of innovative ideas</i></b></p> <p>2.3. Facilitate and participate in <b><i>collaborative work arrangements</i></b> to foster innovation</p> <p>2.4. Build and lead teams to work in <b><i>ways that maximise opportunities for innovation</i></b></p>
3. Promote innovation	<p>3.1. Acknowledge suggestions, improvements and innovations from all colleagues</p> <p>3.2. Find appropriate <b><i>ways of celebrating and promoting innovation</i></b></p> <p>3.3. Promote and reinforce the value of innovation according to the vision and objectives of the organisation or project</p> <p>3.4. Promote and support the evaluation of innovative ideas within the wider organisational or project context</p>
4. Create a physical environment which supports innovation	<p>4.1. Evaluate the <b><i>impact of the physical environment</i></b> in relation to innovation</p> <p>4.2. Collaborate with colleagues about ideas for enhancing the physical work environment before taking action</p> <p>4.3. Consider potential for supporting innovation when selecting physical resources and equipment</p> <p>4.4. Design, fit-out and decorate workspaces to encourage creative mindsets, collaborative working and the development of positive workplace relationships</p>

ELEMENT	PERFORMANCE CRITERIA
5. Provide learning opportunities	<p>5.1.Pro-actively share relevant information, knowledge and skills with colleagues</p> <p>5.2.Provide or encourage <i>formal and informal learning opportunities</i> to help develop the skills needed for innovation</p> <p>5.3.Create opportunities in which individuals can learn from the experience of others</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication, consultation and negotiation skills to model and lead, open and collaborative relationships
- comprehension skills to interpret and develop information that may deal with complex ideas and relate to issues both within and outside a given workplace context
- planning and organisational skills to implement wide-ranging practical processes and procedures that support innovation
- problem-solving skills to assess and respond to challenges and risks around innovation at an operational management level
- self-management and learning skills to evaluate and enhance personal effectiveness, and to promote a culture of ongoing learning and development.

#### Required knowledge

- benefits of providing coaching and learning opportunities in relation to innovation
- concept of innovation, what it is and what it means for different people either working independently or within an organisation
- context for innovation in the relevant workplace context including core business values, overall objectives, broader environmental context and the need to ensure the value and benefit of innovative ideas and projects
- different ways of rewarding performance
- factors and tools that can motivate individuals to use creative thinking and apply innovative work practices
- legislative framework that impacts on operations in the relevant workplace context
- management principles and leadership styles, including the impact of different approaches on innovation
- typical challenges and barriers to innovation within teams and organisations, and ways of overcoming these
- ways in which workplace climate can affect individual attitudes and performance.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>establishment of procedures and practices (for a project or a workplace) which support and foster innovative work practice and include sound evaluation processes</li> <li>modelling of behaviour that supports innovative work practice</li> <li>knowledge and understanding of the role of leaders and managers in encouraging innovation, and the issues and challenges associated with building and sustaining an innovative work environment.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>involvement of a team for which the candidate provides leadership and guidance.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>evaluation of outcomes and processes from activities managed by the candidate, particularly in relation to how innovation and innovative practice was encouraged and supported</li> <li>oral or written questioning to assess knowledge of ways that innovation can be fostered and the typical challenges and barriers to innovation.</li> </ul>
<b>Guidance information for assessment</b>	Innovation does not occur in isolation. Holistic assessment with other units relevant to the industry sector, workplace and job role is highly recommended.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Leadership and management activities</i></b> may include:	<ul style="list-style-type: none"> <li>• people management practices</li> <li>• planning processes</li> <li>• regular management meetings</li> <li>• review processes</li> </ul>
<b><i>Risks</i></b> may include:	<ul style="list-style-type: none"> <li>• budgetary issues</li> <li>• challenging changes in relationships, work practices and general workplace climate</li> <li>• unforeseen impacts of innovative ideas</li> </ul>
<b><i>Working conditions</i></b> may include:	<ul style="list-style-type: none"> <li>• family-friendly leave entitlements</li> <li>• flexible working hours</li> <li>• social leave</li> <li>• study leave</li> <li>• time provided for coming up with ideas</li> </ul>
<b><i>Workplace procedures</i></b> may relate to:	<ul style="list-style-type: none"> <li>• briefing processes</li> <li>• client relations</li> <li>• performance management</li> <li>• project management</li> <li>• staff meetings</li> <li>• training</li> </ul>
<b><i>Evaluation of innovative ideas</i></b> may relate to:	<ul style="list-style-type: none"> <li>• analysing consistency with overall goals, values or vision</li> <li>• assessing resource requirements and practicalities</li> <li>• assessing the potential to find 'champions' or supporters</li> <li>• evaluating the external factors that may impact on the idea</li> <li>• exploring the implications of ideas that may stretch or change existing ways of doing things</li> </ul>
<b><i>Collaborative work arrangements</i></b> might be:	<ul style="list-style-type: none"> <li>• cross section</li> <li>• vertical teams</li> <li>• within a section</li> <li>• working with supplier organisations or partner</li> </ul>

RANGE STATEMENT	
	organisations
<i>Ways that maximise opportunities for innovation</i> may relate to:	<ul style="list-style-type: none"> <li>• collaborating</li> <li>• collecting data</li> <li>• creative thinking</li> <li>• future scanning</li> <li>• getting feedback</li> <li>• making suggestions</li> <li>• networking</li> </ul>
<i>Ways of celebrating and promoting innovation</i> may include:	<ul style="list-style-type: none"> <li>• congratulating the project team</li> <li>• ensuring management acknowledgment</li> <li>• providing a newsletter story about the idea</li> <li>• using the idea to help foster other ideas</li> <li>• well-planned group incentive schemes</li> </ul>
<i>Impact of the physical environment</i> may relate to:	<ul style="list-style-type: none"> <li>• eating areas</li> <li>• extent to which design or style links with declared philosophies or objectives</li> <li>• external areas</li> <li>• general ambience of the work environment</li> <li>• location of different people</li> <li>• presence and ambience of relaxation areas</li> <li>• style of décor</li> <li>• use of creative messages or images in the workplace</li> <li>• workspace design and décor</li> <li>• workstation arrangements and opportunities for interaction</li> </ul>
<i>Formal and informal learning opportunities</i> may include:	<ul style="list-style-type: none"> <li>• coaching</li> <li>• conferences</li> <li>• formal training courses/programs</li> <li>• information seminars</li> <li>• job rotation</li> <li>• mentoring</li> <li>• online learning</li> </ul>

## Unit Sector(s)

Unit sector	
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## Competency field

Competency field	Creativity and Innovation - Innovation
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## Co-requisite units

Co-requisite units		

## BSBITS401B Maintain business technology

### Modification History

Release	Comments
Release 1	<p>This version first released with <i>BSB07 Business Training Package version 6.0</i>.</p> <p>Revised unit. Required skills updated to focus on learning and development practices and compliance with policy and procedures.</p> <p>Replaces BSBITS401A Maintain business technology</p>

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to maintain the effectiveness of business technology in the workplace. It includes maintaining existing technology and planning for future technology requirements.

### Application of the Unit

This unit applies to individuals with a broad knowledge of business technology who contribute well developed skills in creating solutions to maintenance and upgrade issues with existing technology. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Not applicable.

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Maintain performance of hardware and software	<p>1.1 Monitor and evaluate system effectiveness to ensure it meets <b><i>organisational and system requirements</i></b></p> <p>1.2 Use operating system, drive and disk structure, reports and files to identify performance problems</p> <p>1.3 <b><i>Maintain disk drives and peripherals</i></b> according to manufacturers' and organisational requirements</p> <p>1.4 Replace <b><i>consumables</i></b> in accordance with manufacturers' and organisational requirements</p>
2. Provide basic system administration	<p>2.1 Carry out system back-up procedure at regular intervals according to organisational and system requirements</p> <p>2.2 Install and operate <b><i>software</i></b> applications in accordance with developers' and organisational requirements</p> <p>2.3 Maintain and update security access procedures in line with organisational requirements</p> <p>2.4 Ensure that licence for use of software is used, checked and recorded in accordance with organisational requirements</p> <p>2.5 Regularly maintain and update virus programs in accordance with organisational requirements</p>
3. Identify future technology requirements	<p>3.1 Maintain knowledge of current and new <b><i>technology</i></b> by regularly accessing <b><i>sources of information</i></b></p> <p>3.2 Identify and develop <b><i>improved technology systems</i></b> using feedback from clients and colleagues</p> <p>3.3 Assess existing technology against newly available technology to determine future needs and priorities</p> <p>3.4 Identify and select new technologies to achieve and maintain continuous organisational development</p> <p>3.5 Obtain management and budget approval for new selected technologies</p>

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- communication skills to explain the operation and troubleshooting of technology in the work environment
- literacy skills to interpret and evaluate the purposes and objectives of various uses of technology; to display logical organisation of written information
- problem-solving skills to address routine and non-routine faults with hardware and software
- research and analytical skills to analyse and identify organisation's future technology requirements.

### Required knowledge

- costs and benefits of technology maintenance strategies
- general features and capabilities of current industry accepted hardware and software products
- principles of environmental sustainable practice in implementing business technology
- importance of back-up and security procedures; maintenance and diagnostic procedures; licensing, installation and purchasing procedures
- key provisions of relevant legislation from all forms of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - environmental issues
  - occupational health and safety (OHS).

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>installing software and hardware</li> <li>organising and accessing software, materials and consumables</li> <li>maintaining technology security and maintenance systems</li> <li>knowledge of costs and benefits of technology maintenance strategies.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>access to an actual workplace or simulated environment</li> <li>access to office equipment and resources</li> <li>access to examples of technology maintenance and security procedures.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>analysis of responses to case studies and scenarios</li> <li>demonstration of techniques</li> <li>oral or written questioning to assess knowledge of general features and capabilities of current industry accepted hardware and software products.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>other information and communications technology or general administration units.</li> </ul>

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>Organisational and system requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• back-up procedures</li> <li>• Code of Conduct</li> <li>• ethical standards</li> <li>• legal and organisational policy/guidelines and requirements</li> <li>• maintenance of customised software</li> <li>• OHS policies, procedures and programs</li> <li>• quality assurance and/or procedures manuals</li> <li>• register of licenses</li> <li>• restore procedures</li> <li>• security and confidentiality procedures</li> <li>• software licence documentation</li> <li>• storage of information technology documentation</li> <li>• storage retrieval and type of product licenses</li> <li>• updating of virus protection systems.</li> </ul>
<b><i>Disk drive and peripherals maintenance</i></b> may include:	<ul style="list-style-type: none"> <li>• backing up files before major maintenance</li> <li>• checking hard drive for errors</li> <li>• cleaning dust from internal and external surfaces</li> <li>• creating more free space on the hard disk</li> <li>• defragmenting the hard disk</li> <li>• deleting unwanted files</li> <li>• reviewing programs</li> <li>• using up-to-date anti-virus programs.</li> </ul>
<b><i>Consumables</i></b> may include:	<ul style="list-style-type: none"> <li>• disks</li> <li>• magnetic tape and cassettes</li> <li>• print heads</li> <li>• print media</li> <li>• printer ribbons and cartridges.</li> </ul>
<b><i>Software</i></b> may include:	<ul style="list-style-type: none"> <li>• accounting applications</li> <li>• commercial software applications</li> <li>• database applications</li> <li>• internet/intranet/extranet related programs</li> <li>• organisation-specific software</li> <li>• presentation applications</li> </ul>

	<ul style="list-style-type: none"> <li>• spreadsheet applications</li> <li>• word processing applications.</li> </ul>
<b>Technology</b> may include:	<ul style="list-style-type: none"> <li>• client services</li> <li>• computers</li> <li>• data transfer devices</li> <li>• modems</li> <li>• peripherals, including: <ul style="list-style-type: none"> <li>• printers, scanners, tape cartridges</li> <li>• speakers, multimedia kits</li> <li>• personal computer, modems</li> <li>• input equipment such as mouse, touch pad, keyboard, pens</li> <li>• mobile phones, palmtops and personal digital assistants (PDAs), laptops and desktop computers</li> <li>• Bluetooth devices, universal serial bus (USB), Firewire (IEEE 1394)</li> </ul> </li> <li>• photocopiers</li> <li>• printers</li> <li>• scanners</li> <li>• software.</li> </ul>
<b>Sources of information</b> may include:	<ul style="list-style-type: none"> <li>• computer hardware manufacturers</li> <li>• computer magazines and journals</li> <li>• computer software designers</li> <li>• industry associations</li> <li>• internal/external clients</li> <li>• internet</li> <li>• retail outlets</li> <li>• seminars, workshops and training sessions</li> <li>• trade fairs.</li> </ul>
<b>Improved technology systems</b> may include:	<ul style="list-style-type: none"> <li>• access protocols</li> <li>• cable data transmissions</li> <li>• delivery and installation systems</li> <li>• hardware upgrades</li> <li>• implementing a new system</li> <li>• maintenance options</li> <li>• multimedia</li> <li>• networking options</li> <li>• new hardware</li> <li>• new software</li> <li>• resource usage monitoring</li> <li>• software upgrades</li> </ul>

	<ul style="list-style-type: none"><li>• environmentally sustainable design practices.</li></ul>
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## Unit Sector(s)

Information and Communications Technology – IT Support

## Custom Content Section

Not applicable.

## BSBITU305A Conduct online transactions

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to undertake a range of online transactions, including banking, buying and selling products and services.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who are skilled operators and apply a broad range of competencies in various work contexts. They may exercise discretion and judgement using appropriate theoretical knowledge of conducting online transactions to provide technical advice and support to a team.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and investigate online service provider	1.1.Undertake online research to identify <i>suppliers</i> of required <i>products/services</i> 1.2.Assess service provider <i>confidentiality, security</i> and <i>privacy</i> facilities in accordance with individual and organisational requirements 1.3.Assess potential products/services for authenticity
2. Perform online transactions	2.1.Confirm organisational requirements for products/services to be obtained 2.2.Ensure authentication information is secured in accordance with organisational requirements 2.3.Use appropriate online functions to obtain required products/services 2.4.Report any difficulties in accessing or using online facilities to the service provider 2.5.Complete transaction and ensure that products/services are received in accordance with terms of online transaction
3. Maintain records of online transactions	3.1.Maintain records of transactions in accordance with organisational policy, procedures and level of authority 3.2.Compare organisational records with online records and deal with irregularities according to organisational policy and procedures
4. Review online transactions	4.1.Review obtained products/services rendered to determine quality, timeliness and level of customer service in relation to advertised profile 4.2.Make recommendations regarding continued or future use of online service provider, as supported by transaction history

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to negotiate with online service provider/s.
- literacy skills to read and analyse information for its relevance and sufficiency, and to follow policies and procedures
- numeracy skills to work with and evaluate monetary figures
- technology skills to operate computer and software appropriate to transaction being performed.

#### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety
- policies and procedures relating to use of the internet and online purchasing
- service provider requirements
- legal and ethical requirements relating to a range of online transactions.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• identification and selection of appropriate services to meet defined needs</li> <li>• use of appropriate security considerations</li> <li>• knowledge of policies and procedures relating to the use of the internet and online purchasing.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to office equipment and resources.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• analysis of responses to case studies and scenarios</li> <li>• demonstration of techniques</li> <li>• oral or written questioning to assess knowledge of legal and ethical requirements relating to a range of online transactions</li> <li>• review of recommendations made regarding continued or future use of online service provider.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• other information and communications technology units.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Suppliers</i></b> may include:	<ul style="list-style-type: none"> <li>• banks or other financial institutions</li> <li>• e-auction</li> <li>• e-brokerage service</li> <li>• e-mail</li> <li>• e-procurement service</li> <li>• e-shop</li> <li>• third party marketplace</li> </ul>
<b><i>Products/services</i></b> may include:	<ul style="list-style-type: none"> <li>• financial services</li> <li>• goods</li> <li>• insurance</li> <li>• loans</li> <li>• shares</li> </ul>
<b><i>Confidentiality, security and privacy</i></b> may include:	<ul style="list-style-type: none"> <li>• access to independent reviews of financial services such as:             <ul style="list-style-type: none"> <li>• Australian Competition and Consumer Commission (ACCC)</li> <li>• Financial Planning Association of Australia (FPA)</li> </ul> </li> <li>• authentication services</li> <li>• disclaimers</li> <li>• firewall protection</li> <li>• jurisdiction</li> <li>• level of encryption</li> <li>• limit of liability</li> <li>• personal identification number (PIN)</li> <li>• physical site security of web server</li> <li>• receipting</li> <li>• terms and conditions of website use</li> <li>• use of 'cookies' - small files automatically downloaded from a web server to the computer of someone browsing a website - information stored in cookies can be accessed any time computer returns to the site</li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"><li>• user name and password</li><li>• warranties</li></ul>
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**Unit Sector(s)**

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Information and Communications Technology - IT Use
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**Co-requisite units**

<b>Co-requisite units</b>		

## BSBLED401A Develop teams and individuals

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to determine individual and team development needs and to facilitate the development of the workgroup.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals with a broad knowledge of learning and development who apply their skills in addressing development needs to meet team objectives. They may have responsibility to provide guidance or to delegate aspects of tasks to others.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine development needs	<p>1.1. Systematically identify and implement <i>learning and development needs</i> in line with <i>organisational requirements</i></p> <p>1.2. Ensure that a learning plan to meet individual and group training and development needs is collaboratively developed, agreed to and implemented</p> <p>1.3. Encourage individuals to self-evaluate performance and identify areas for improvement</p> <p>1.4. Collect <i>feedback on performance</i> of team members from relevant sources and compare with established team learning needs</p>
2. Develop individuals and teams	<p>2.1. Identify learning and development program goals and objectives, ensuring a match to the specific knowledge and skill requirements of competency standards relevant to the industry</p> <p>2.2. Ensure that <i>learning delivery methods</i> are appropriate to the learning goals, the learning style of participants, and availability of <i>equipment and resources</i></p> <p>2.3. Provide workplace learning opportunities, and <i>coaching and mentoring assistance</i> to facilitate individual and team achievement of competencies</p> <p>2.4. Create development opportunities that incorporates a range of activities and support materials appropriate to the achievement of identified competencies</p> <p>2.5. Identify and approve resources and time lines required for learning activities in accordance with organisational requirements</p>
3. Monitor and evaluate workplace learning	<p>3.1. Use feedback from individuals or teams to identify and implement improvements in future learning arrangements</p> <p>3.2. Assess and record outcomes and performance of individuals/teams to determine the effectiveness of development programs and the extent of additional development support</p> <p>3.3. Negotiate modifications to learning plans to improve the efficiency and effectiveness of learning</p> <p>3.4. Document and maintain records and reports of competency according to organisational requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to receive and report on feedback, to maintain effective relationships and to manage conflict
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities
- leadership skills to gain trust and confidence of clients and colleagues
- literacy skills to read, write and understand a variety of texts; and to edit and proofread documents to ensure clarity of meaning, accuracy and consistency of information
- negotiation skills to achieve mutually acceptable outcomes
- technology skills to support effective communication and presentation.

#### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- facilitation techniques to encourage team development and improvement
- organisational policies, plans and procedures
- career paths and competency standards relevant to the industry.

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- identifying and implementing learning opportunities for others
- giving and receiving feedback from team members to encourage participation in and effectiveness of team
- creating learning plans to match skill needs
- knowledge of relevant legislation.

#### Context of and specific resources for assessment

Assessment must ensure:

- access to an actual workplace or simulated environment
- access to office equipment and resources
- examples of learning and development plans, policies and procedures
- examples of documents relating to diversity policies and procedures.

#### Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate
- analysis of responses to case studies and scenarios
- oral or written questioning to assess knowledge of career paths and competency standards relevant to the industry
- review of records and reports of competency.

#### Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- management units
- other learning and development units.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Learning and development needs</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• career planning/development</li> <li>• coaching, mentoring and/or supervision</li> <li>• formal/informal learning programs</li> <li>• internal/external training provision</li> <li>• performance appraisals</li> <li>• personal study</li> <li>• recognition of current competence/skills recognition</li> <li>• work experience/exchange/opportunities</li> <li>• workplace skills assessment</li> </ul>
<p><b><i>Organisational requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• access and equity principles and practices</li> <li>• anti-discrimination and related policy</li> <li>• business and performance plans</li> <li>• confidentiality and security requirements</li> <li>• defined resource parameters</li> <li>• ethical standards</li> <li>• goals, objectives, plans, systems and processes</li> <li>• legal and organisational policies, guidelines and requirements</li> <li>• OHS policies, procedures and programs</li> <li>• quality and continuous improvement processes and standards</li> <li>• quality assurance and/or procedures manuals</li> </ul>
<p><b><i>Feedback on performance</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• formal/informal performance appraisals</li> <li>• obtaining feedback from clients</li> <li>• obtaining feedback from supervisors and colleagues</li> <li>• personal, reflective behaviour strategies</li> <li>• routine organisational methods for monitoring service delivery</li> </ul>
<p><b><i>Learning delivery methods</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• conference and seminar attendance</li> <li>• formal course participation</li> <li>• induction</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• involvement in professional networks</li> <li>• on-the-job coaching or mentoring</li> <li>• presentations/demonstrations</li> <li>• problem-solving</li> <li>• work experience</li> </ul>
<i>Equipment and resources</i> may include:	<ul style="list-style-type: none"> <li>• facilities</li> <li>• funding</li> <li>• guest speakers</li> <li>• technological tools and equipment</li> <li>• time</li> <li>• training equipment such as whiteboards and audio-visual equipment</li> </ul>
<i>Coaching and mentoring assistance</i> may include:	<ul style="list-style-type: none"> <li>• fair and ethical practice</li> <li>• non-discriminatory processes and activities</li> <li>• presenting and promoting a positive image of the collective group</li> <li>• problem-solving</li> <li>• providing encouragement</li> <li>• providing feedback to another team member</li> <li>• respecting the contribution of all participants and giving credit for achievements</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Workforce Development - Learning and Development
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**Co-requisite units**

<b>Co-requisite units</b>		

## BSBSMB406A Manage small business finances

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to implement, monitor and review strategies for the ongoing management of a small business's finances. It also includes day to day financial management of the small business.</p> <p>Specific legal requirements apply to the management of a small business.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This work is undertaken by individuals who operate a small business.</p> <p>The unit is suitable for existing micro and small businesses or a department in a larger organisation.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement financial plan	<p>1.1. Identify <i>financial information</i> requirements and obtain <i>specialist services</i>, as required, to profitably operate and extend the business in accordance with the business plan</p> <p>1.2. Produce financial budgets/projections, including <i>cash flow</i> estimates, as required for each forward period, and distribute to <i>relevant people</i> in accordance with legal requirements</p> <p>1.3. Negotiate, secure and manage business capital to best enable implementation of the business plan and to meet the requirements of <i>financial backers</i></p> <p>1.4. Develop and maintain strategies to enable adequate financial provision for taxation in accordance with legal requirements</p> <p>1.5. Develop, monitor and maintain client <i>credit policies</i>, including contingencies for debtors in default, to maximise cash flow</p> <p>1.6. Select key performance indicators to enable ongoing monitoring of financial performance</p> <p>1.7. Record and communicate financial procedures to relevant people to facilitate implementation of the business plan</p>
2. Monitor financial performance	<p>2.1. Regularly monitor and report on financial performance targets and analyse data to establish the extent to which the <i>financial plan</i> has been met</p> <p>2.2. Monitor marketing and operational strategies for their effects on the financial plan</p> <p>2.3. Calculate and evaluate <i>financial ratios</i> according to own/industry benchmarks</p> <p>2.4. Assess financial plan to determine whether variations or alternative plans are needed, and change as required</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- analytical skills to interpret financial data
- communication skills to negotiate capital and to report on performance
- literacy skills to interpret legal requirements and financial reports
- numeracy skills to calculate costs, prices, profit and other financial information.

#### Required knowledge

The following knowledge must be assessed as part of this unit:

- benchmarking
- financial decision making relevant to the business
- financial indicators
- purpose of financial reports
- preparation and interpretation of budget/actual reports
- principles for preparation of balance sheets and their interpretation
- principles for preparation of profit and loss statements and their interpretation
- stock records/stock control relevant to the business.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• development, implementation and review of strategies for the ongoing management of finance</li> <li>• maintenance of day-to-day financial management of the business as well as implementation of broad financial strategies</li> <li>• knowledge of purpose of financial reports.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to relevant documentation</li> <li>• candidate's individual circumstances and work in the context of establishing or running a small business, are the basis for assessment.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• portfolio of evidence including financial reports</li> <li>• preparation and review of financial ratios</li> <li>• review of cash flow projections</li> <li>• analysis of development, monitoring and maintenance of client credit policies</li> <li>• oral or written questioning to assess knowledge of principles for preparation of balance sheets and their interpretation.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• BSBSMB402A Plan small business finances</li> <li>• BSBSMB405A Monitor and manage small business operations.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Financial plan*** may include:

- analysis of sales by product/service, identifying where they were sold and to whom
- cash flow estimates for each forward period
- current financial state of the enterprise (or owner/operator)
- estimates of profit and loss projections for each forward period
- financial performance to date (if applicable)
- likely return on investment
- monthly, quarterly or annual returns
- non-recurrent assets calculations
- profit, turnover, capital and equity targets
- projected profit targets, pricing strategies, margins
- projections of likely financial results (budgeting)
- projections, which may vary depending on the importance of such information and the stage in the life of the business
- resources required to implement the proposed marketing and production strategies (staff, materials, plant and equipment)
- review of financial inputs required (sources and forms of finance)
- risks and measures to manage or minimise risks
- working, fixed, debt and equity capital
- working in conjunction with external consultants e.g. investment analysts, accountants, financiers

***Financial information*** may include:

- accrual of staff leave/entitlements
- asset management strategies which may include:
  - owning, leasing, sharing, syndicating
  - maintaining and deploying assets
- asset registers
- balance sheets
- bookkeeping/accounting/stock/job costing records

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• business activity statements</li> <li>• business capital</li> <li>• cash book</li> <li>• cash flow forecasts</li> <li>• financial budgets</li> <li>• financial indicators, which may be short-, medium- and/or long-term</li> <li>• payroll records, superannuation entitlements</li> <li>• profit and loss statements</li> <li>• ratios for profitability, liquidity/efficiency/financial structure</li> <li>• risk management</li> <li>• statements/forecasts</li> <li>• taxation returns including goods and services tax</li> </ul>
<i>Specialist services</i> may include:	<ul style="list-style-type: none"> <li>• accountants</li> <li>• business brokers/business consultants</li> <li>• government agencies</li> <li>• industry/trade associations</li> <li>• lawyers and providers of legal advice</li> <li>• mentors</li> <li>• online gateways</li> <li>• providers of training in accounting software</li> </ul>
<i>Cash flow</i> may include:	<ul style="list-style-type: none"> <li>• anticipated payments</li> <li>• anticipated receipts</li> <li>• customer credit policy/debt recovery</li> <li>• taxation provisions</li> </ul>
<i>Relevant people</i> may include:	<ul style="list-style-type: none"> <li>• family members</li> <li>• financial backers</li> <li>• franchise agency</li> <li>• owner/operator</li> <li>• partners</li> <li>• regulatory bodies</li> <li>• trade or industry associations</li> </ul>
<i>Financial backers</i> may include:	<ul style="list-style-type: none"> <li>• financiers/banks/lending institutions</li> <li>• leasing and hire purchase financiers</li> <li>• providers of venture capital</li> <li>• shareholders/partners/owners/family/friends</li> </ul>
<i>Credit policies</i> may include:	<ul style="list-style-type: none"> <li>• collateral</li> <li>• credit limits</li> <li>• credit references</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• debt collection</li> <li>• payment options</li> <li>• proof of Indigenous identity</li> <li>• trading terms</li> </ul>
<i>Financial ratios</i> may include:	<ul style="list-style-type: none"> <li>• current ratio</li> <li>• days debtors outstanding</li> <li>• days stock on hand</li> <li>• expense percentages</li> <li>• gross profit percentage</li> <li>• liquid ratio</li> <li>• net profit percentage</li> <li>• proprietary/debt ratio</li> <li>• return on investment/return on total assets</li> <li>• staff productivity measures</li> <li>• stock turn rates</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Management and Leadership - Small and Micro Business
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## Co-requisite units

<b>Co-requisite units</b>		

## BSBMGT502B Manage people performance

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to manage the performance of staff who report to them directly. Development of key result areas and key performance indicators and standards, coupled with regular and timely coaching and feedback, provide the basis for performance management.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to all managers and team leaders who manage people. It covers work allocation and the methods to review performance, reward excellence and provide feedback where there is a need for improvement.</p> <p>The unit makes the link between performance management and performance development, and reinforces both functions as a key requirement for effective managers.</p> <p>This is a unit that all managers/prospective managers who have responsibility for other employees should strongly consider undertaking.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Allocate work	1.1.Consult relevant groups and individuals on work to be allocated and resources available 1.2.Develop work plans in accordance with operational plans 1.3.Allocate work in a way that is efficient, cost effective and outcome focussed 1.4.Confirm <b>performance standards, Code of Conduct</b> and work outputs with relevant teams and individuals 1.5.Develop and agree <b>performance indicators</b> with relevant staff prior to commencement of work 1.6.Conduct <b>risk analysis</b> in accordance with the organisational risk management plan and legal requirements
2. Assess performance	2.1.Design <b>performance management</b> and review processes to ensure consistency with organisational objectives and policies 2.2.Train participants in the performance management and review process 2.3.Conduct performance management in accordance with organisational protocols and time lines 2.4.Monitor and evaluate performance on a continuous basis
3. Provide feedback	3.1.Provide informal feedback to staff on a regular basis 3.2.Advise relevant people where there is poor performance and take necessary actions 3.3.Provide on-the-job coaching when necessary to improve performance and to confirm <b>excellence in performance</b> 3.4.Document performance in accordance with the organisational performance management system 3.5.Conduct formal structured feedback sessions as necessary and in accordance with organisational policy
4. Manage follow up	4.1.Write and agree performance improvement and development plans in accordance with organisational policies 4.2.Seek assistance from human resources specialists where appropriate 4.3.Reinforce excellence in performance through recognition and continuous feedback

ELEMENT	PERFORMANCE CRITERIA
	<p>4.4. Monitor and coach individuals with poor performance</p> <p>4.5. Provide support services where necessary</p> <p>4.6. Counsel individuals who continue to perform below expectations and implement the disciplinary process if necessary</p> <p>4.7. <i>Terminate</i> staff in accordance with legal and organisational requirements where serious misconduct occurs or ongoing poor-performance continues</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to articulate expected standards of performance, to provide effective feedback and to coach staff who need development
- risk management skills to analyse, identify and develop mitigation strategies for identified risks
- planning and organisation skills to ensure a planned and objective approach to the performance management system.

#### Required knowledge

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant awards and certified agreements
- performance measurement systems utilised within the organisation
- unlawful dismissal rules and due process
- staff development options and information.

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- documented performance indicators and a critical description and analysis of performance management system from the workplace
- techniques in providing feedback and coaching for improvement in performance
- knowledge of relevant awards and certified agreements.

#### Context of and specific resources for assessment

Assessment must ensure:

- access to appropriate documentation and resources normally used in the workplace.

#### Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- analysis of responses to case studies and scenarios
- assessment of written reports
- demonstration of techniques in providing feedback and coaching
- direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate
- review of work plans, performance indicators, risk analysis, performance management and review processes, performance improvement and development plans.

#### Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- other management units.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Performance standards</i></b> mean:	<ul style="list-style-type: none"> <li>level of performance sought from an individual or group which may be expressed either quantitatively or qualitatively</li> </ul>
<b><i>Code of Conduct</i></b> means:	<ul style="list-style-type: none"> <li>agreed (or decreed) set of rules relating to employee behaviour/conduct with other employees or an agreed (or decreed) set of rules relating to employee behaviour/conduct with other employees or customers</li> </ul>
<b><i>Performance indicators</i></b> mean:	<ul style="list-style-type: none"> <li>measures against which performance outcomes are gauged</li> </ul>
<b><i>Risk analysis</i></b> means:	<ul style="list-style-type: none"> <li>determination of the likelihood of a negative event preventing the organisation meeting its objectives and the likely consequences of such an event on organisational performance</li> </ul>
<b><i>Performance management</i></b> means:	<ul style="list-style-type: none"> <li>in accordance with relevant industrial agreements</li> <li>process or set of processes for establishing a shared understanding of what an individual or group is to achieve, and managing and developing individuals in a way which increases the probability it will be achieved in both the short- and long-term</li> </ul>
<b><i>Excellence in performance</i></b> means:	<ul style="list-style-type: none"> <li>regularly and consistently exceeding the performance targets established while meeting the organisation's performance standards</li> </ul>
<b><i>Termination</i></b> means:	<ul style="list-style-type: none"> <li>cessation of the contract of employment between an employer and an employee, at the initiative of the employer within relevant industrial agreements</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Management and Leadership - Management
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## Co-requisite units

<b>Co-requisite units</b>		

## BSBMGT515A Manage operational plan

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to develop and monitor implementation of the operational plan to provide efficient and effective workplace practices within the organisation's productivity and profitability plans.</p> <p>Management at a strategic level requires systems and procedures to be developed and implemented to facilitate the organisation's operational plan.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to people who manage the work of others and operate within the parameters of a broader strategic and/or business plan. The task of the manager at this level is to develop and implement an operational plan to ensure that the objectives and strategies outlined in the strategic and/or business plan are met by work teams. However in some larger organisations operational plans may be developed by a strategic planning unit.</p> <p>At this level work will normally be carried out within complex and diverse methods and procedures, which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop operational plan	<p>1.1. Research, analyse and document <b>resource requirements</b> and develop an operational plan in consultation with <b>relevant personnel, colleagues and specialist resource managers</b></p> <p>1.2. Develop and/or implement <b>consultation processes</b> as an integral part of the operational planning process</p> <p>1.3. Ensure details of the operational plan include the development of <b>key performance indicators</b> to measure organisational performance</p> <p>1.4. Develop and implement <b>contingency plans</b> at appropriate stages of operational planning</p> <p>1.5. Ensure the development and presentation of proposals for resource requirements is supported by a variety of information sources and seek specialist advice as required</p> <p>1.6. Obtain approval for plan from relevant parties and ensure understanding among work teams involved</p>
2. Plan and manage resource acquisition	<p>2.1. Develop and implement strategies to ensure that employees are recruited and/or inducted within the organisation's human resources management policies and practices</p> <p>2.2. Develop and implement strategies to ensure that physical resources and services are acquired in accordance with the <b>organisation's policies, practices and procedures</b></p>
3. Monitor and review operational performance	<p>3.1. Develop, monitor and review performance systems and processes to assess progress in achieving profit and productivity plans and targets</p> <p>3.2. Analyse and interpret budget and actual financial information to monitor and review profit and productivity performance</p> <p>3.3. Identify areas of under performance, recommend solutions, and take prompt action to rectify the situation</p> <p>3.4. Plan and implement systems to ensure that mentoring and coaching are provided to support individuals and teams to effectively, economically and safely use resources</p> <p>3.5. Negotiate recommendations for variations to operational plans and gain approval from <b>designated persons/groups</b></p>

ELEMENT	PERFORMANCE CRITERIA
	3.6. Develop and implement systems to ensure that procedures and records associated with documenting performance are managed in accordance with organisational requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- literacy skills to access and use workplace information and to write a succinct and practical plan
- technology skills to use software to produce and monitor the plan against performance indicators
- planning and organisational skills
- coaching skills to work with people with poor performance
- numeracy skills to allocate and manage financial resources.

#### Required knowledge

- models and methods for operational plans
- budgeting processes
- alternative approaches to improving resource usage and eliminating resource inefficiencies and waste.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>development of an operational plan with details of how it will be implemented and monitored</li> <li>knowledge of models and methods for operational plans.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>access to appropriate documentation and resources normally used in the workplace.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>oral or written questioning to assess knowledge of budgeting processes</li> <li>review of operational plan, key performance indicators and contingency plans</li> <li>evaluation of employee recruitment and induction strategies</li> <li>evaluation of processes implemented to acquire physical resources and services.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>other units from the Diploma of Management.</li> </ul>

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Resource requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• goods and services to be purchased and ordered</li> <li>• human, physical and financial resources - both current and projected</li> <li>• stock requirements and requisitions</li> </ul>
<b><i>Relevant personnel, colleagues and specialist resource managers</i></b> may include:	<ul style="list-style-type: none"> <li>• employees at the same level or more senior managers</li> <li>• managers</li> <li>• occupational health and safety committee/s and other people with specialist responsibilities</li> <li>• supervisors</li> <li>• union or employee representatives</li> </ul>
<b><i>Consultation processes</i></b> may refer to:	<ul style="list-style-type: none"> <li>• email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans</li> <li>• mechanisms used to provide feedback to the work team in relation to outcomes of consultation</li> <li>• meetings, interviews, brainstorming sessions</li> </ul>
<b><i>Operational plans</i></b> may also be termed:	<ul style="list-style-type: none"> <li>• action plans</li> <li>• annual plans</li> <li>• management plans</li> <li>• tactical plans</li> </ul>
<b><i>Key performance indicators</i></b> may refer to:	<ul style="list-style-type: none"> <li>• measures for monitoring or evaluating the efficiency or effectiveness of a system which may be used to demonstrate accountability and to identify areas for improvements</li> </ul>
<b><i>Contingency plans</i></b> may include:	<ul style="list-style-type: none"> <li>• contracting out or outsourcing human resources and other functions or tasks</li> <li>• diversification of outcomes</li> <li>• finding cheaper or lower quality raw materials</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>and consumables</li> <li>• increasing sales or production</li> <li>• recycling and re-using</li> <li>• rental, hire purchase or alternative means of procurement of required materials, equipment and stock</li> <li>• restructuring of organisation to reduce labour costs</li> <li>• risk identification, assessment and management processes</li> <li>• seeking further funding</li> <li>• strategies for reducing costs, wastage, stock or consumables</li> <li>• succession planning</li> </ul>
<i>Organisation's policies, practices and procedures</i> may include:	<ul style="list-style-type: none"> <li>• organisational culture</li> <li>• organisational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources</li> <li>• Standard Operating Procedures</li> <li>• undocumented practices in line with organisational operations</li> </ul>
<i>Designated persons/groups</i> may include:	<ul style="list-style-type: none"> <li>• groups designated in workplace policies and procedures</li> <li>• managers or supervisors whose roles and responsibilities include decision making on operations</li> <li>• other stakeholders such as Board members</li> <li>• other work groups or teams whose work will be affected by recommendations for variations</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

Competency field	Management and Leadership - Management
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## Co-requisite units

Co-requisite units		

## BSBMKG523A Design and develop an integrated marketing communication plan

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to identify and evaluate the range of marketing communication options and media, to design an integrated marketing communication plan, and to develop a marketing communication brief and creative brief that reflect client needs and preferences.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals working in a supervisory or management marketing or advertising role within a marketing or advertising team or media organisation.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine marketing communication requirements	1.1. Confirm <b>marketing communication purpose</b> and objectives with the client 1.2. Obtain comprehensive <b>client and product information</b> 1.3. Review outcomes of previous marketing communication with the client 1.4. Confirm budget allocation with the client
2. Develop a marketing communication brief	2.1. Develop a brief, ensuring it contains a client profile, purpose statement and objectives that reflect client needs 2.2. State <b>marketing communication objectives</b> in measurable terms and provide specific guidelines on what is to be accomplished by the marketing communication 2.3. Define key characteristics, competitive factors and the market situation facing the product or service 2.4. Include a summary of <b>information on the target audience</b> , and <b>legal and ethical constraints</b>
3. Design the integrated marketing communication strategy	3.1. Select <b>marketing communication options</b> appropriate for the marketing communication brief 3.2. Critically analyse the advantages and disadvantages of each marketing communications variable and <b>media vehicles</b> for the product or service 3.3. Determine <b>media characteristics</b> that match the requirements of the brief 3.4. Analyse media consumption habits for primary and supplementary marketing media among target audiences 3.5. Evaluate media styles as they relate to brand character of the product or service being marketed 3.6. Compare the <b>advantages and disadvantages of selecting multiple media</b> in a media plan 3.7. Develop and apply <b>criteria</b> for selecting multiple media combinations
4. Select and recommend media for the marketing strategy	4.1. Select media vehicles that match the requirements of the marketing brief for the product or service 4.2. Recommend primary and secondary marketing media that meet target audience preferences 4.3. Ensure recommended media meet the brief, client's requirements, and legal and ethical constraints

ELEMENT	PERFORMANCE CRITERIA
5. Develop a creative brief	<p>5.1. Identify <i>creative content</i> for the chosen media using consumer language in the brief</p> <p>5.2. Identify <i>pitch or appeal</i> for the product or service in the brief that meets client requirements</p> <p>5.3. Identify <i>supporting information</i> required for consumer understanding of the product or service in the brief</p> <p>5.4. Ensure that budget for creative work, consistent with the overall marketing budget, is contained in the brief</p> <p>5.5. Incorporate a deadline for creative work that is consistent with the overall media schedule in the brief</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to question, clarify and report when creating marketing and creative briefs
- learning skills to evaluate and learn from previous marketing communication to contribute to the marketing communication plan
- literacy skills to:
  - read and interpret marketing briefs
  - write reports with complex concepts and ideas
- numeracy skills to develop budgets
- organisational and time-management skills to sequence tasks and meet timelines
- research and data-collection skills to evaluate the suitability of media to the product or service, and brand and marketing objectives
- technology skills to use a wide range of office equipment and software to create a marketing brief

#### Required knowledge

- economic, social and industry trends relevant to the choice of appropriate media options
- industry products or services in order to recommend appropriate media options
- overview knowledge to identify key provisions of relevant legislation, codes of practice and national standards that affect business operations as they relate to marketing, such as:
  - anti-discrimination legislation
  - consumer protection laws
  - copyright legislation
  - ethical principles
  - fair trading laws
  - privacy laws
  - Trade Practices Act
- principles of consumer behaviour and influences on buyer behaviour
- range of marketing communication options for different markets
- range of media vehicles for marketing communication options

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>production of an integrated strategic marketing communication plan for presentation to a client which includes: <ul style="list-style-type: none"> <li>purpose statement</li> <li>definition of the target audience</li> <li>analysis of the product or service</li> <li>legal and ethical constraints</li> <li>marketing communication functions and media vehicles chosen, with rationale for each</li> <li>creative brief for the media options</li> <li>schedule for the creative work</li> <li>budgetary allocation for each media vehicle.</li> </ul> </li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> <li>a workplace or simulated work environment</li> <li>office equipment and resources</li> <li>required documentation, including marketing brief.</li> </ul>
<b>Method of assessment</b>	<p>The following assessment methods are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>review of portfolio of evidence of actions taken to produce a strategic marketing communication plan</li> <li>assessment of documented strategic marketing communication plan</li> <li>oral or written questioning to assess actions taken to produce the marketing communication plan</li> <li>analysis of responses to case studies and scenarios.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>BSBADV507B Develop a media plan.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Marketing communication purpose</i></b> may include:	<ul style="list-style-type: none"> <li>communicating a message to a particular audience</li> <li>differentiating features or benefits</li> <li>promoting image</li> <li>providing information</li> <li>recruiting staff</li> <li>retaining customers</li> <li>stimulating demand for a product or service.</li> </ul>
<b><i>Client and product information</i></b> may include:	<ul style="list-style-type: none"> <li>company and its business policies and practices</li> <li>company's promotional ethos</li> <li>competition</li> <li>distribution channels</li> <li>existing customers and target market</li> <li>packaging design</li> <li>past advertising for the product</li> <li>price, if any</li> <li>problems and opportunities facing the product</li> <li>product name and characteristics.</li> </ul>
<b><i>Marketing communication objectives</i></b> may include:	<ul style="list-style-type: none"> <li>improve sales performance and/or profit</li> <li>launch or re-launch a product or service</li> <li>maintain or improve market share</li> <li>maintain or increase awareness of a product or service</li> <li>test a product or service.</li> </ul>
<b><i>Information on the target audience</i></b> may include:	<ul style="list-style-type: none"> <li>attitudes</li> <li>cultural factors</li> <li>demographics</li> <li>existing product usage</li> <li>lifestyle</li> <li>social factors</li> <li>values.</li> </ul>
<b><i>Legal and ethical constraints</i></b> may include:	<ul style="list-style-type: none"> <li>codes of practice, such as those issued by:               <ul style="list-style-type: none"> <li>Advertising Federation of Australia</li> <li>Australian Communications and Media Authority</li> </ul> </li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Australian Competition and Consumer Commission</li> <li>• Australasian Performing Right Association</li> <li>• Commercial Radio Australia</li> <li>• Free TV Australia</li> <li>• cultural expectations and influences</li> <li>• ethical principles</li> <li>• legislation, for example:               <ul style="list-style-type: none"> <li>• anti-discrimination legislation</li> <li>• consumer protection laws</li> <li>• copyright legislation</li> <li>• ethical principles</li> <li>• fair trading laws</li> <li>• privacy laws</li> <li>• Trade Practices Act</li> </ul> </li> <li>• policies and guidelines</li> <li>• regulations</li> <li>• social responsibilities, such as protection of children and environmentally sustainable practices</li> <li>• societal expectations.</li> </ul>
<b><i>Marketing communication options</i></b> may include:	<ul style="list-style-type: none"> <li>• advertising</li> <li>• customer service</li> <li>• direct marketing</li> <li>• events and sponsorships</li> <li>• packaging</li> <li>• personal selling</li> <li>• publicity and public relations</li> <li>• sales promotion.</li> </ul>
<b><i>Media vehicles</i></b> may include:	<ul style="list-style-type: none"> <li>• aerial advertising</li> <li>• billboards and posters</li> <li>• cable and satellite television</li> <li>• cinema</li> <li>• direct mail</li> <li>• direct response</li> <li>• email marketing</li> <li>• exhibitions and trade fairs</li> <li>• internet</li> <li>• magazines</li> <li>• new media, including multimedia and hypermedia, such as:</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• streaming video and audio</li> <li>• 3-D virtual reality environments and effects</li> <li>• highly interactive user interfaces</li> <li>• mobile presentation</li> <li>• use of high-bandwidth</li> <li>• CD and DVD media</li> <li>• telephone and digital data integration</li> <li>• online communities</li> <li>• microdevices</li> <li>• live internet broadcasting</li> <li>• person-to-person visual communication</li> <li>• one-to-many visual communication</li> <li>• newspapers</li> <li>• outdoor</li> <li>• personal selling</li> <li>• podcasting</li> <li>• point of sale</li> <li>• radio</li> <li>• sales literature</li> <li>• sales promotion</li> <li>• sponsorship</li> <li>• television</li> <li>• telemarketing</li> <li>• transit media, such as bus sides and taxi backs</li> <li>• video, video games and videotext.</li> </ul>
<b>Media characteristics</b> may include:	<ul style="list-style-type: none"> <li>• level of audience involvement</li> <li>• level of audience receptiveness</li> <li>• motion effects</li> <li>• proximity to purchase</li> <li>• sound effects</li> <li>• visual effects</li> <li>• whether the target audience responds actively</li> <li>• whether the target audience responds passively.</li> </ul>
<b>Advantages of selecting multiple media</b> may include:	<ul style="list-style-type: none"> <li>• increasing the frequency of the advertising message</li> <li>• increasing the reach of the advertising message.</li> </ul>
<b>Disadvantages of selecting multiple media</b>	<ul style="list-style-type: none"> <li>• duplication of impact</li> <li>• duplication of resources</li> <li>• increasing the cost of marketing.</li> </ul>

<b>RANGE STATEMENT</b>	
may include:	
<i>Criteria</i> may include:	<ul style="list-style-type: none"> <li>• whether frequency will be increased</li> <li>• whether reach will be increased</li> <li>• cost</li> <li>• avoidance of 'zipping and zapping'.</li> </ul>
<i>Creative content</i> may include:	<ul style="list-style-type: none"> <li>• brand or image factors</li> <li>• colour</li> <li>• features of the product or service.</li> </ul>
<i>Pitch or appeal</i> may include:	<ul style="list-style-type: none"> <li>• key benefits promised to the audience by the advertiser, which may be:               <ul style="list-style-type: none"> <li>• emotional</li> <li>• need-arousing</li> <li>• need-satisfying</li> <li>• negative</li> <li>• positive</li> <li>• rational.</li> </ul> </li> </ul>
<i>Supporting information</i> may include:	<ul style="list-style-type: none"> <li>• evidence to support the claimed benefit</li> <li>• purchasing information</li> <li>• reassurance for existing users</li> <li>• requirement to specify the target audience.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Business development - marketing
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## Co-requisite units

Co-requisite units		

## BSBPRO401A Develop product knowledge

### Modification History

Release	Comments
Release 2	New release of this Qualification released with <i>version 6 of BSB07 Business Services Training Package</i> .  Outdated advice removed

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to develop product knowledge in preparation for the sales process.

### Application of the Unit

This unit applies to individuals in a sales related position in a small, medium or large enterprise across a wide variety of industries and contexts who develop their product knowledge prior to undertaking selling activities. They may provide advice and support about aspects of sales solutions to support a sales team.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Not applicable

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Acquire knowledge of products in a specified area	1.1. Identify <b><i>information sources</i></b> about <b><i>products</i></b> in a specified area and evaluate them for reliability and validity 1.2. Identify product purpose/s and use/s 1.3. Identify key <b><i>features</i></b> of the product/s 1.4. Identify product strengths and weaknesses 1.5. Articulate guarantees and warranties and identify service support details
2. Convert product knowledge into benefits	2.1. Identify features of the product which have potential buyer appeal 2.2. Present features of the product which have buyer appeal as benefits to the buyer 2.3. Present product benefits within the context of <b><i>organisational requirements</i></b> and legislation
3. Evaluate competitors' products	3.1. Use a range of information sources to identify competitors' products 3.2. Compare features, benefits, strengths and weaknesses of competitors' products with own products 3.3. Establish relative standing of the organisation's product with the competitors' product/s and communicate differences to the buyer

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

<b>Required skills</b>
<ul style="list-style-type: none"><li>• information management skills to summarise information verbally and non-verbally</li><li>• literacy and numeracy skills to interpret sales data and to summarise information obtained from a variety of verbal and non-verbal sources.</li></ul>
<b>Required knowledge</b>
<ul style="list-style-type: none"><li>• features, benefits, strengths and weaknesses of own organisation's and competitors' products</li><li>• industry competitors, trends and developments</li><li>• organisational structure/s, roles and responsibilities, policies, procedures, product labelling and descriptions</li><li>• potential buyer markets</li><li>• processes used when buying and selling products and services</li><li>• identification and overview knowledge of key provisions of relevant legislation from all levels of government that affects business operations, codes of practice and national standards, such as:<ul style="list-style-type: none"><li>• anti-discrimination</li><li>• consumer protection</li><li>• contract law legislation</li></ul></li><li>• ethical principles<ul style="list-style-type: none"><li>• privacy laws</li><li>• Trade Practices Act.</li></ul></li></ul>

## Evidence Guide

*The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• comparison of the key features and benefits of product/s with competitor offerings</li> <li>• demonstration of product knowledge offered by an organisation</li> <li>• presentation of key features and benefits of own product/s.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to information sources about an organisation's and competitors' products, services or ideas</li> <li>• access to office equipment and resources.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• observation of presentation of key features and benefits to customers or simulated customers</li> <li>• oral or written questioning to assess knowledge of features, benefits, strengths and weaknesses of organisation's and competitors' products</li> <li>• review of evaluation of identification of information sources about products in a specified area</li> <li>• evaluation of strengths and weaknesses established for competitors' products.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b>Information sources</b> may include:	<ul style="list-style-type: none"> <li>• associations</li> <li>• catalogues</li> <li>• claims of competitive sales people</li> <li>• competitor websites</li> <li>• competitor sales literature</li> <li>• external sales data sources such as warehouse withdrawals</li> <li>• internal sales data records</li> <li>• other company personnel</li> <li>• sales conventions</li> <li>• trade association magazines</li> <li>• trade shows</li> </ul>
<b>Products</b> may include:	<ul style="list-style-type: none"> <li>• goods</li> <li>• ideas</li> <li>• services</li> </ul>
<b>Features</b> may include:	<ul style="list-style-type: none"> <li>• brand</li> <li>• colour</li> <li>• country of origin</li> <li>• covenant</li> <li>• manufacturer</li> <li>• product care details</li> <li>• safety aspect</li> <li>• shelf life</li> <li>• size</li> <li>• style</li> <li>• warnings</li> </ul>
<b>Organisational requirements</b> may include:	<ul style="list-style-type: none"> <li>• level of client service required</li> <li>• policies and procedures which are formally documented and are available for reference within the workplace</li> </ul>

## Unit Sector(s)

## Business Development - Sales

## BSBPUR402B Negotiate contracts

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit specifies the outcomes required to negotiate terms of contracts with suppliers, and prepare and finalise contracts.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who negotiate and formalise complex purchasing arrangements involving significant risk and/or significant expenditure and detailed legal and documentation arrangements.</p> <p>This unit applies to individuals who negotiate contracts as part of a broad purchasing role but are not specialist legal practitioners. They are typically guided by organisational contract negotiation guidelines and work under minimal supervision of a senior purchasing manager or in consultation with senior management.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Negotiate terms of contracts with suppliers	1.1. Offer advice and undertake negotiations without prejudice 1.2. Advise suppliers of the organisation's intent to accept their offers 1.3. Negotiate <i>issues</i> with suppliers 1.4. Determine desired outcomes, negotiation plans and schedules for negotiations 1.5. Undertake negotiations and reach agreements with suppliers in accordance with plans 1.6. Negotiate and document contract requirements to the satisfaction of the organisation and suppliers
2. Prepare contracts	2.1. Draft required <i>contracts</i> using legal expertise if required 2.2. Distribute draft contracts to <i>relevant personnel</i> and suppliers 2.3. Ensure any discrepancies or disagreements are clarified and resolved to the satisfaction of all parties 2.4. Ensure <i>checks</i> of the legality and validity of draft contracts are made 2.5. Obtain approvals to sign contracts
3. Finalise contracts	3.1. Ensure contracts are signed and exchanged between the organisation and suppliers 3.2. Ensure contracts and related documents are stored and safeguarded 3.3. Advise relevant personnel of contract requirements 3.4. Advise unsuccessful suppliers of non-acceptance of offers

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities
- communication and negotiation skills to liaise with suppliers and reach agreement with suppliers on contracts
- literacy skills to draft concepts and write reports containing complex concepts
- technology application skills to use a range of software programs relevant to purchasing and contracting.

#### Required knowledge

- identification and overview knowledge of key provisions of relevant legislation from all levels of government that affects business operations, codes of practice and national standards, such as:
  - consumer protection legislation
  - contract law
  - import of goods and services, where relevant
  - sale of goods legislation
  - Trade Practices Act
- organisational practices, policies and procedures for purchasing
- product knowledge about the goods and services being supplied
- purchasing and procurement principles for:
  - accountability
  - probity and transparency
  - risk management
  - value for money.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• documented agreement of terms with suppliers</li> <li>• drafting and completion of a contract with a supplier for goods and services</li> <li>• informing of successful and unsuccessful suppliers.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to office equipment and resources</li> <li>• organisation's purchasing strategies and relevant purchasing records.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• analysis of responses to case studies and scenarios</li> <li>• assessment of draft and finalised contracts for the supply of goods and services</li> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• observation of contacting successful and unsuccessful suppliers about the awarding of the contract</li> <li>• oral or written questioning to assess knowledge</li> <li>• review testimony from team members, colleagues, supervisors or managers</li> <li>• review of authenticated documents from the workplace or training environment.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• other purchasing units.</li> </ul>



## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Issues</i></b> may include:	<ul style="list-style-type: none"> <li>• issues relating to non-compliance with invitation to offer requirements</li> <li>• issues relating to occupational health and safety (OHS) performance standards</li> <li>• issues relating to the form and specific requirements of contract documentation</li> </ul>
<b><i>Contracts</i></b> may include:	<ul style="list-style-type: none"> <li>• agreements for one-off or ongoing supply of goods or services</li> <li>• agreements with Australian or overseas individuals, contractors, corporations, individuals and government agencies</li> <li>• electronic or paper-based agreements</li> <li>• memoranda of understanding/agreement</li> </ul>
<b><i>Relevant personnel</i></b> may include:	<ul style="list-style-type: none"> <li>• CEO</li> <li>• managers</li> <li>• leaders</li> <li>• coordinators</li> <li>• OHS specialists</li> <li>• supervisors</li> <li>• other persons authorised to commit the organisation to purchases</li> <li>• internal users of purchased goods and services</li> <li>• owner</li> <li>• Board</li> <li>• specialist personnel involved in purchasing, asset maintenance and finance</li> </ul>
<b><i>Checks</i></b> may include:	<ul style="list-style-type: none"> <li>• referring the contract to others such as:             <ul style="list-style-type: none"> <li>• external legal representative for organisation</li> <li>• legal officer within organisation</li> <li>• purchasing manager</li> </ul> </li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Administration - Purchasing and Contracting
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**Co-requisite units**

<b>Co-requisite units</b>		

## BSBREL402A Build client relationships and business networks

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to establish, maintain and improve client relationships, and to actively participate in networks to support attainment of key business outcomes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals in a variety of roles who are required to establish, maintain and improve client relationships to facilitate organisational objectives.</p> <p>This unit primarily applies to marketing and sales professionals who depend on excellent interpersonal relationships and communication skills to achieve outcomes, but may also apply to other individuals working in any industry.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Initiate interpersonal communication with clients	1.1. Identify and use <i>preferred client communication styles and methods</i> 1.2. Establish rapport with clients using <i>verbal</i> and <i>non-verbal communication</i> processes 1.3. Investigate and act upon opportunities to offer positive feedback to clients 1.4. Use open questions to promote two-way communication 1.5. Identify and act upon potential <i>barriers to effective communication</i> with clients 1.6. Initiate communication processes which relate to client needs, preferences and expectations
2. Establish client relationship management strategies	2.1. Develop client loyalty objectives focussing on the development of long term business partnerships 2.2. Assess client profile information to determine approach 2.3. Develop <i>client loyalty strategies</i> to attract and retain clients in accordance with the business strategy 2.4. Identify and apply <i>client care and client service standards</i>
3. Maintain and improve ongoing relationships with clients	3.1. Develop <i>strategies to obtain ongoing feedback</i> from clients to monitor satisfaction levels 3.2. Develop strategies to elicit feedback which provide information in a form that can be used to improve relationships with clients 3.3. Obtain feedback to develop and implement strategies which maintain and improve relationships with clients
4. Build and maintain networks	4.1. Allocate time to establish and maintain business contacts 4.2. Participate in <i>business associations</i> and/or <i>professional development activities</i> to establish and maintain a <i>network</i> of support for the business and to enhance personal knowledge of the market 4.3. Establish communication channels to exchange <i>information and ideas</i> 4.4. Provide, seek and verify information to the network

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to determine client needs and preferences through active listening and presenting ideas clearly and precisely
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities
- interpersonal skills to establish rapport, and to build and maintain relationships with clients.

#### Required knowledge

- key provisions of relevant legislation from all forms of government, codes of practice and national standards that may affect aspects business operations, such as:
  - anti-discrimination legislation
  - consumer laws including appropriate state/territory legislation
  - ethical principles
  - marketing code of practice
  - privacy laws
  - Trade Practices Act
- marketing communications concepts and processes
- principles and techniques for effective communication and networking
- sources of business related networks.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• establishing and maintaining relationships with a range of clients related to the candidate's business</li> <li>• participating in and providing, an active contribution to a business related network.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to office equipment and resources.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• assessment of written reports or journals on client relationship activities</li> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• observation of the candidate communicating with clients</li> <li>• observation of presentations made to business networks</li> <li>• oral or written questioning to assess knowledge and understanding</li> <li>• review of authenticated documents from the workplace or training environment</li> <li>• review of testimony from team members, colleagues, supervisors or managers.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• other relationship management units</li> <li>• marketing units.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Preferred client communication styles and methods*** may include:

- email
- face-to-face
- mail
- phone

***Verbal communication*** may include:

- articulation
- clarity of speech
- feedback
- language
- listening skills
- open questions
- questioning skills
- voice modulation
- voice projection

***Non-verbal communication*** may include:

- active listening
- body language
- body orientation
- clothing
- colour
- distance
- facial expression
- grooming
- gestures
- music
- posture
- sound
- touching
- voice

***Barriers to effective communication*** may include:

- acting on false assumptions and stereotypes
- cultural differences not being addressed
- educational differences not being addressed
- failure to prominently display contact details in all communications provided to the client

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• inappropriate word choice</li> <li>• ineffective non-verbal communication</li> <li>• lack of 'contact us' forms or pages on websites</li> <li>• lack of distribution of reply paid cards or envelopes in mail outs</li> <li>• lack of voice modulation and articulation</li> <li>• limited opening hours of call centres or office</li> <li>• not listening actively</li> <li>• organisational factors</li> <li>• physical, personal, gender and age differences not being addressed</li> </ul>
<i>Client loyalty strategies</i> include:	<ul style="list-style-type: none"> <li>• access to dedicated staff</li> <li>• added value offers</li> <li>• anniversary offers</li> <li>• client clubs</li> <li>• client reward schemes</li> <li>• credit or discount facilities</li> <li>• dedicated or private facilities</li> <li>• discounts</li> <li>• formal letter of thanks</li> <li>• frequent purchaser programs</li> <li>• handwritten note thanking the client</li> <li>• offering promotional items</li> <li>• phone call thanking client for the business</li> <li>• regular recontact with best clients</li> <li>• thank you gifts and promotions</li> </ul>
<i>Client care and client service standards</i> may include:	<ul style="list-style-type: none"> <li>• accuracy of billing</li> <li>• accuracy of product/service descriptions, specifications in marketing communications</li> <li>• complaint resolution times</li> <li>• incidences of stock outs and back orders</li> <li>• on-hold times</li> <li>• order delivery standards such as:               <ul style="list-style-type: none"> <li>• whether right product or service was delivered</li> <li>• delivered to right person or address</li> <li>• delivered on time</li> <li>• politeness, helpfulness and grooming of delivery staff</li> <li>• delivery vehicles parked properly</li> </ul> </li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• cleanliness of delivery vehicles</li> <li>• shipment tracking services</li> <li>• telephone answering times and responses</li> </ul>
<i>Strategies to obtain ongoing feedback</i> may include:	<ul style="list-style-type: none"> <li>• including 'comments and queries' or 'bouquets and brickbats' on all order forms</li> <li>• complaints handling procedures</li> <li>• email</li> <li>• letter</li> <li>• soliciting complaints</li> <li>• surveys of current clients</li> <li>• surveys of lapsed clients to determine reason/s for ceasing to buy</li> <li>• telephone interviews</li> <li>• training staff to ask open questions about product or service levels</li> </ul>
<i>Business associations</i> may include:	<ul style="list-style-type: none"> <li>• chambers of commerce</li> <li>• industry associations</li> <li>• institutes</li> <li>• professional bodies</li> <li>• societies</li> </ul>
<i>Professional development activities</i> may include:	<ul style="list-style-type: none"> <li>• demonstrations</li> <li>• exhibitions</li> <li>• fairs</li> <li>• industry information seminars</li> <li>• industry training</li> <li>• pre-launch activities</li> <li>• technical information briefings</li> <li>• trade shows</li> </ul>
<i>Networks</i> may include:	<ul style="list-style-type: none"> <li>• business</li> <li>• formal</li> <li>• groups</li> <li>• individuals</li> <li>• informal</li> <li>• organisations</li> <li>• personal</li> </ul>
<i>Information and ideas</i> may include:	<ul style="list-style-type: none"> <li>• changes in the environment</li> <li>• changing customer requirements</li> <li>• information on competitors' activities</li> <li>• personal, professional or business support</li> </ul>

## Unit Sector(s)

Unit sector	
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## Competency field

Competency field	Stakeholder Relations - Relationship Management
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## Co-requisite units

Co-requisite units		

## BSBRES401A Analyse and present research information

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to gather, organise and present workplace information using available systems.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who are required to apply their broad knowledge of the work environment to analysis and research tasks. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather and organise information	<p>1.1. Gather and organise <b>information</b> in a format suitable for analysis, interpretation and dissemination in accordance with <b>organisational requirements</b></p> <p>1.2. Access information held by the organisation ensuring accuracy and relevance in line with established organisational requirements</p> <p>1.3. Ensure that <b>methods of collecting information</b> are reliable and make efficient use of resources in accordance with organisational requirements</p> <p>1.4. Identify research requirements for combining online research with non-electronic sources of information</p> <p>1.5. Use <b>business technology</b> to access, organise and monitor information in accordance with organisational requirements</p> <p>1.6. Update, modify, maintain and store information, in accordance with organisational requirements</p>
2. Research and analyse information	<p>2.1. Clearly define <b>objectives of research</b> ensuring consistency with organisational requirements</p> <p>2.2. Ensure that data and <b>research strategies</b> used are valid and relevant to the requirements of the research and make efficient use of available resources</p> <p>2.3. Identify <b>key words and phrases</b> for use as part of any online search strategy, including the use of <b>Boolean operators</b> and other search tools</p> <p>2.4. Use reliable <b>methods of data analysis</b> that are suitable to research purposes</p> <p>2.5. Ensure that assumptions and conclusions used in analyses are clear, justified, supported by evidence and consistent with research and <b>business objectives</b></p>
3. Present information	<p>3.1. Present recommendations and issues in an appropriate format, style and structure using suitable business technology</p> <p>3.2. Structure and format reports in a clear manner that conforms to organisational requirements</p> <p>3.3. Report and distribute research findings in accordance with organisational requirements</p> <p>3.4. Obtain <b>feedback</b> and comments on suitability and sufficiency of findings in accordance with organisational requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- literacy skills to read, write and understand a variety of texts; and to edit and proofread documents to ensure clarity of meaning, accuracy and consistency of information
- problem-solving skills to deal with information which is contradictory, ambiguous, inconsistent or inadequate
- technology skills to select and use technology appropriate to a task
- research skills to identify and access information.

#### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- organisational record keeping/filing systems, security procedures and safe recording practices
- organisational policies and procedures relating to distribution of workplace information, and legal and ethical obligations
- research processes and strategies to identify new sources (online and print) of information and to use them most efficiently and effectively.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• presenting information and data</li> <li>• maintaining and handling data and documents systematically</li> <li>• analysing and interpreting data to support organisational activities</li> <li>• knowledge of research processes and strategies to identify new sources of information.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to office equipment and resources</li> <li>• examples of research tasks and resources.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• analysis of responses to case studies and scenarios</li> <li>• demonstration of techniques</li> <li>• observation of presentations</li> <li>• review of documentation outlining recommendations and issues</li> <li>• review of reports outlining research findings.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• general administration units</li> <li>• IT use units</li> <li>• Governance units</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Information*** may include:

- demographic data
- service delivery records
- computer databases (library catalogue, customer records, subscription database, internet)
- computer files (letters, memos and other documents)
- correspondence (faxes, memos, letters, email)
- financial figures
- forms (insurance forms, membership forms)
- information on training needs
- invoices (from suppliers, to debtors)
- marketing reports/plans/budgets
- personnel records (personal details, salary rates)
- production targets
- sales records (monthly forecasts, targets achieved)

***Organisational requirements*** may include:

- anti-discrimination and related policy
- business and performance plans
- Code of Conduct/Code of Ethics
- defined resource parameters
- ethical standards
- goals, objectives, plans, systems and processes
- information protocols
- legal and organisational policies, guidelines and requirements
- management and accountability channels
- OHS policies, procedures and programs
- procedures for updating records
- quality assurance and/or procedures manuals
- security and confidentiality requirements

***Methods of collecting***

- checking research provided by others

<b>RANGE STATEMENT</b>	
<b><i>information</i></b> may include:	<ul style="list-style-type: none"> <li>• checking written material including referrals and client files</li> <li>• individual research</li> <li>• information from other organisations</li> <li>• interviews with community members, colleagues/customers</li> <li>• observation and listening</li> <li>• previous file records</li> <li>• questioning (in person or indirect)</li> <li>• recruitment applications and other forms</li> </ul>
<b><i>Business technology</i></b> may include:	<ul style="list-style-type: none"> <li>• answering machine</li> <li>• computer</li> <li>• fax machine</li> <li>• photocopier</li> <li>• telephone</li> </ul>
<b><i>Objectives of research</i></b> may include:	<ul style="list-style-type: none"> <li>• comparative analysis</li> <li>• hypothesis testing</li> <li>• identification of trends</li> <li>• industry pricing policies</li> <li>• process mapping</li> <li>• situational diagnosis</li> </ul>
<b><i>Research strategies</i></b> may include:	<ul style="list-style-type: none"> <li>• data analysis</li> <li>• documentation reviews</li> <li>• focus groups</li> <li>• interviewing colleagues and clients</li> <li>• online searching</li> <li>• product sampling</li> <li>• subscription databases</li> </ul>
<b><i>Key words and phrases</i></b> may include:	<ul style="list-style-type: none"> <li>• American spellings when searching online</li> <li>• cultural or geographic terms</li> <li>• using different thesauri in different databases</li> </ul>
<b><i>Boolean operators</i></b> may include:	<ul style="list-style-type: none"> <li>• exclude - / NOT</li> <li>• include +/ AND</li> <li>• or</li> <li>• phrase searching " "( )</li> <li>• variations, depending on the resource being used</li> </ul>
<b><i>Methods of data analysis</i></b> may include:	<ul style="list-style-type: none"> <li>• data sampling</li> <li>• feedback on results</li> <li>• peer review</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• review of previous research</li> <li>• statistical analysis</li> </ul>
<b>Business objectives</b> may include:	<ul style="list-style-type: none"> <li>• community capacity building</li> <li>• community development</li> <li>• service provision</li> <li>• business planning</li> <li>• financial performance</li> <li>• flexibility, responsiveness</li> <li>• interpersonal communication</li> <li>• marketing and customer service</li> <li>• organisational values and behaviours</li> <li>• people management</li> <li>• work procedures and quality assurance manuals</li> </ul>
<b>Feedback</b> may include:	<ul style="list-style-type: none"> <li>• audit documentation and reports</li> <li>• comments from community, board members, clients and colleagues</li> <li>• customer satisfaction questionnaires</li> <li>• quality assurance data</li> <li>• returned goods</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Knowledge Management - Research
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## Co-requisite units

<b>Co-requisite units</b>	

<b>Co-requisite units</b>		

## BSBRKG304B Maintain business records

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to maintain the records of a business or records system in good order on a day to day basis.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals requiring some understanding of relevant theoretical knowledge relating to recordkeeping functions. It is not assumed that individuals at this level would have responsibility for supervising the work of others; however it is assumed that as a recordkeeping practitioner their work will support effective recordkeeping and governance practices across the organisation.</p> <p>The application is in relation to the maintenance of records from an existing business or records system that has guidelines and processes to assist in the process. Work carried out in the interest of system maintenance will be performed under supervision or in consultation with more senior staff or users of the system.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collate business records	<ul style="list-style-type: none"><li>1.1. Identify individual <i>records</i> or <i>information</i> which should be incorporated into <i>business or records system</i> according to organisational criteria</li><li>1.2. Sort records in accordance with workplace requirements</li><li>1.3. Adhere to <i>security and access requirements</i> in accordance with organisational procedures</li></ul>
2. Update business or records system	<ul style="list-style-type: none"><li>2.1. Identify and record control information for describing new records to be incorporated into business or records system</li><li>2.2. Update control information describing movement or use of records within business or records system</li><li>2.3. Accurately record and update control information in business or records system</li><li>2.4. Identify and remove records of completed business activities from current system for disposal</li></ul>
3. Prepare reports from the business or records system	<ul style="list-style-type: none"><li>3.1. Interpret requests for <i>reports</i> and clarify the content and frequency sought, where necessary</li><li>3.2. Prepare reports from business or records system in accordance with instructions or request</li><li>3.3. Prepare reports in accordance with organisational security and access procedures</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to explain and clarify procedures, and to interview users to identify their records/information needs
- literacy skills to read and interpret nature of record content, functions and problems
- problem-solving and analysis skills to identify and manage records.

#### Required knowledge

- key provisions of relevant legislation from all forms of government, regulations, standards and documentation that may affect aspects of business operations, such as:
  - AS 5044.1:2002 AGLS Metadata element set
  - AS 5090:2003 Work process analysis for recordkeeping
  - AS ISO 15489:2004 Records management
  - AS ISO 23081.1:2006 Information and documentation - Records management processes - Metadata for records - Principles
  - Australian Stock Exchange(ASX) Principles of Good Corporate Governance
  - ethical principles
  - codes of practice
  - privacy and freedom of information
  - archives and records legislation
  - occupational health and safety
- general principles and processes of records management and records management systems, such as:
  - systems of control
  - records continuum theory
  - mandate and ownership of business process
  - environmental context
  - records characteristics.

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- complying with organisational procedures and workplace requirements
- knowledge and understanding of business or records systems
- accurately recording information.

#### Context of and specific resources for assessment

Assessment must ensure:

- access to an actual workplace or simulated work environment
- access to office equipment and resources
- access to examples of records, recordkeeping systems and policies
- access to workplace reference materials such as procedural manuals and company policies.

#### Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- analysis of responses to case studies and scenarios
- demonstration of techniques
- direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate
- review of authenticated documents from the workplace or training environment
- oral or written questioning to assess knowledge of general principles and processes of business or records systems.

#### Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- administration units
- other knowledge management units.



## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Records</i></b> may be:</p>	<ul style="list-style-type: none"> <li>• at different stages of use:               <ul style="list-style-type: none"> <li>• active</li> <li>• archival</li> </ul> </li> <li>• digital:               <ul style="list-style-type: none"> <li>• remote drives</li> <li>• servers</li> <li>• CDs</li> <li>• DVDs</li> <li>• imaging systems</li> <li>• PC-based applications</li> <li>• mainframe</li> </ul> </li> <li>• physical:               <ul style="list-style-type: none"> <li>• audio-visual or multimedia</li> <li>• graphic</li> <li>• microform</li> <li>• paper-based (acid free or multiple copies</li> </ul> </li> <li>• from a variety of sources:               <ul style="list-style-type: none"> <li>• already in the custody of the organisation</li> <li>• in the process of being transferred between organisations</li> </ul> </li> </ul>
<p><b><i>Information</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• customer relationship management</li> <li>• expenditure</li> <li>• human resources management</li> <li>• invoicing/sales</li> <li>• legislative/regulatory/licensing compliance</li> <li>• risk management</li> <li>• stock control</li> <li>• taxation, asset management</li> </ul>
<p><b><i>Business or records systems</i></b> may be:</p>	<ul style="list-style-type: none"> <li>• archival control systems</li> <li>• business systems</li> <li>• cash register-based systems</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• characteristics relating to:               <ul style="list-style-type: none"> <li>• aggregations</li> <li>• context</li> <li>• entities</li> <li>• metadata</li> </ul> </li> <li>• current business or records systems</li> <li>• electronic records and document management system (ERDMS)</li> <li>• informal</li> <li>• paper-based accumulation and card systems</li> <li>• PC-based accounting systems, employee and tax records systems</li> <li>• proprietary recordkeeping package</li> <li>• storage facilities systems</li> <li>• systems unique to individual workplaces and organisations</li> </ul>
<i>Security and access requirements</i> may relate to:	<ul style="list-style-type: none"> <li>• individuals or positions of individuals</li> <li>• protection of privacy</li> <li>• security restrictions</li> <li>• trade secrets or commercial-in-confidence information</li> </ul>
<i>Reports</i> may be:	<ul style="list-style-type: none"> <li>• ad hoc</li> <li>• computer generated</li> <li>• hand prepared</li> <li>• part of a management solution for another support/operational function</li> <li>• regular records management reports</li> <li>• system management reports</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

Competency field	Knowledge Management - Recordkeeping
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## Co-requisite units

Co-requisite units		

## BSBSLS407A Identify and plan sales prospects

### Modification History

Release	Comments
Release 2	New release of this Qualification released with <i>version 6 of BSB07 Business Services Training Package</i> .  Outdated advice removed

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to identify potential sales prospects by applying prospecting methods, and to manage own sales performance by establishing a sales plan and managing stress, time and sales-related paperwork.

### Application of the Unit

This unit applies to individuals working in a sales-related position in a small, medium or large enterprise in a wide variety of industries who identify, collate and follow up sales prospect information that can be used to generate leads. Individuals undertaking this unit may be at entry level or have experience in sales sufficient to provide advice and support about aspects of sales solutions as part of a sales team.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Not applicable

## Employability Skills Information

This unit contains employability skills.

### Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Employ prospecting methods and qualify prospects	<p>1.1. Identify, consider and evaluate the strengths and limitations of a range of primary and secondary <i>prospecting methods</i></p> <p>1.2. Select prospecting methods to match the market to which the product or service is targeted</p> <p>1.3. Target present, previous and new <i>clients</i> through chosen prospecting methods</p> <p>1.4. Research and establish criteria for qualifying leads according to buyer accessibility, <i>buyer motives</i>, product affordability, purchase authority, legal compliance and return for the seller</p> <p>1.5. Ensure the established criteria represent a standard against which the buying potential of individuals and groups is gauged</p>
2. Manage prospect information	<p>2.1. Develop and implement a system for recording prospect information</p> <p>2.2. Monitor and evaluate the effectiveness of the system for recording prospect information</p> <p>2.3. Refine the system for recording prospect information based on evaluation</p>
3. Establish an individualised sales plan	<p>3.1. Establish individual sales goals and quotas to focus work activities based on organisational sales and marketing objectives</p> <p>3.2. Establish consultation and communication structures with clients and supervisors</p> <p>3.3. Plan and document an individualised sales plan to achieve sales goals and quotas within a work system that is constructed against clear timeframes</p> <p>3.4. Monitor and adjust sales plan in relation to established goals and quotas</p> <p>3.5. Evaluate sales plan and adjust where necessary</p>
4. Complete sales paperwork and reports	<p>4.1. Establish a system to collect, record and organise data associated with the sales process</p> <p>4.2. Complete routine reports at regular intervals according to organisational requirements</p> <p>4.3. Use <i>available technology</i> to facilitate record keeping and production of sales reports</p>
5. Organise workload effectively	<p>5.1. Establish routines to provide structure for work and to manage workload</p> <p>5.2. Allocate time for specific <i>work tasks</i> and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>unanticipated events and activities</p> <p>5.3. Conduct an analysis of the time spent on work-related activities and adjust time spent on tasks if required</p> <p>5.4. Apply time-management strategies to minimise non-productive sales activities</p> <p>5.5. Delegate tasks to individuals or sales team members to share workload as appropriate</p> <p>5.6. Monitor <i>symptoms of stress</i> and establish a plan to reduce stress</p>

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- learning skills to evaluate effectiveness of sales plan and make improvements to contribute to the organisation's operations and outcomes
- literacy and information management skills to collect, record and organise data to:
  - establish a sales plan
  - complete sales reports
- planning skills to establish, monitor and adjust sales plan as required
- research and data analysis skills to determine prospect requirements
- self-evaluation skills to identify symptoms of negative stress
- technological skills to use a range of software and business equipment to:
  - collect and record prospect and sales information
  - design and record formats to facilitate information storage and retrieval
- self-management skills to manage own performance and set priorities
- time-management skills to:
  - meet sales time lines
  - sequence tasks
  - set priorities

### Required knowledge

- information management strategies used to manage prospect and sales data
- key principles associated with self-management
- overview knowledge to identify key provisions of relevant legislation, codes of practice and national standards that affect business operations as they relate to sales, such as:
  - anti-discrimination
  - ethical principles
  - consumer protection
  - contract law
  - privacy laws
  - Trade Practices Act
- prospecting methods used in the sales process
- principles of buyer motives
- strategies and techniques to prevent and manage stress

## Evidence Guide

*The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• demonstration of the use and management of different prospecting methods targeting a present, previous and new client</li> <li>• research and establishment of criteria used in qualifying leads identified through prospecting methods</li> <li>• recording, storage and retrieval of prospect information</li> <li>• development and documentation of a sales plan for a specified time period, including: <ul style="list-style-type: none"> <li>• sales goals</li> <li>• quotas</li> <li>• monitoring and evaluation strategies</li> </ul> </li> <li>• organisation of own workload.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> <li>• a workplace or simulated work environment</li> <li>• organisational sales prospect information, databases and records</li> <li>• office equipment and resources.</li> </ul>
<b>Method of assessment</b>	<p>The following assessment methods are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• assessment of criteria developed to qualify sales leads</li> <li>• observation of demonstration of prospecting methods</li> <li>• assessment of individual sales plan documentation</li> <li>• direct questioning combined with portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate</li> <li>• oral or written questioning to assess knowledge of principles of buyer motives, content of sales plan developed and techniques used to organise workload and manage stress levels</li> <li>• review of time-management strategies applied to minimise non-productive sales activities</li> <li>• review of system established to collect, record and organise data associated with the sales process.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>Prospecting methods</i></b> may include:	<ul style="list-style-type: none"> <li>• brokers</li> <li>• cold canvassing</li> <li>• databases</li> <li>• direct mail</li> <li>• internet</li> <li>• intra-organisational leads</li> <li>• journals</li> <li>• magazines</li> <li>• media advertising</li> <li>• networking</li> <li>• newspapers</li> <li>• personal observation</li> <li>• public records</li> <li>• referrals</li> <li>• spotters</li> <li>• telemarketing.</li> </ul>
<b><i>Clients</i></b> may include:	<ul style="list-style-type: none"> <li>• consumers</li> <li>• customers</li> <li>• members</li> <li>• patients</li> <li>• members of other business units within an organisation</li> <li>• other work teams within an organisation</li> <li>• person or organisation who receives or has the potential to receive products, services or ideas supplied by the organisation.</li> </ul>
<b><i>Buyer motives</i></b> may include:	<ul style="list-style-type: none"> <li>• browsing</li> <li>• buying for unqualified prospect e.g. dependant child</li> <li>• gift</li> <li>• housekeeping</li> <li>• replacement item</li> <li>• self-reward</li> <li>• self-gratification.</li> </ul>
<b><i>Available technology</i></b> may include:	<ul style="list-style-type: none"> <li>• databases</li> <li>• email</li> <li>• spreadsheets</li> </ul>

	<ul style="list-style-type: none"> <li>• word processing software packages</li> <li>• other computer applications.</li> </ul>
<i>Work tasks</i> may include:	<ul style="list-style-type: none"> <li>• administrative tasks</li> <li>• face-to-face selling</li> <li>• sales preparation</li> <li>• service calls</li> <li>• travelling.</li> </ul>
<i>Symptoms of stress</i> may include:	<ul style="list-style-type: none"> <li>• anxiety</li> <li>• changed eating habits</li> <li>• difficulty concentrating</li> <li>• fear of criticism or disapproval</li> <li>• feeling overworked or overloaded</li> <li>• feeling tense or on edge</li> <li>• feeling tired</li> <li>• feeling unclear about roles and responsibilities</li> <li>• feeling weak or easily exhausted</li> <li>• increased consumption of alcohol</li> <li>• nervousness</li> <li>• restlessness</li> <li>• trembling or shaking</li> <li>• worry.</li> </ul>

## Unit Sector(s)

Business development - sales

## BSBSLS408A Present, secure and support sales solutions

### Modification History

Release	Comments
Release 3	New release of this Unit with <i>version 7.0 of BSB07 Business Services Training Package</i> .  Trade Practices Act replaced with Competition and Consumer Act 2010 in the Required Knowledge
Release 2	New release of this Unit with <i>version 6.0 of BSB07 Business Services Training Package</i> .  Outdated advice removed
Release 1	Initial release of this Unit.

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to present sales solutions that respond to the specific buying needs of a client, and to use sales processes associated with securing prospect commitment to proceed with a sale. The unit also includes attending to post-sales activities that build and strengthen the partnership between a salesperson and the client, and enhance the prospect of future sales.

### Application of the Unit

This unit applies to individuals working in a sales-related position in a small, medium or large enterprise in a wide variety of industries who use specific sales techniques to present a sales solution to meet buyer needs, secure a prospect's commitment to purchase a product or service, and build post-sale and long-term relationships to establish an ongoing relationship with clients. They may provide sales solutions individually, or provide advice and support about aspects of sales solutions to support a sales team.

## Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

## Pre-Requisites

Not applicable

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Prepare for a sales presentation	<p>1.1 Obtain and organise products, ideas and services for use within a sales presentation</p> <p>1.2 Review product information to ensure familiarity with products</p> <p>1.3 Identify sales tactic options, and assess and choose them in terms of their ability to meet the needs and preferences of the prospect</p> <p>1.4 Consider a variety of sales solutions and prepare to meet buyer needs</p> <p>1.5 Identify and select <i>sales aids</i></p> <p>1.6 Identify alternatives for prospects and assess them in relation to anticipated buyer needs</p>
2. Present a sales solution	<p>2.1 Use gestures, posture, body language, facial expressions and voice to create a supportive selling environment</p> <p>2.2 Use listening skills and open-ended questions to identify buyer needs, preferences, motives and objections</p> <p>2.3 Adjust presentation to match the needs and preferences of the buyer</p> <p>2.4 Use persuasive communication techniques to secure buyer interest</p> <p>2.5 Ensure the presentation demonstrates and communicates the key features of the product and emphasises benefits in relation to identified buyer needs</p> <p>2.6 Obtain and present <i>proof of benefits</i> through product purchase</p> <p>2.7 Use sales aids to build buyer understanding of how the product is aligned with needs</p>
3. Respond to buyer signals	<p>3.1 Identify and assess <i>verbal</i> and <i>non-verbal buying signals</i></p> <p>3.2 Use probing to identify <i>source of buyer resistance</i></p> <p>3.3 Identify the strengths and limitations of <i>buyer resistance strategies</i></p> <p>3.4 Select and implement a strategy for managing buyer resistance</p> <p>3.5 Use trial closes strategically during different stages of the sales process</p>
4. Negotiate and finalise	<p>4.1 Initiate <i>formal close</i> to the sales process following one or</p>

the sale	<p>more trial closes</p> <p>4.2 Select a strategy to close the sale and use supportive and confirming language to support the closure of the sales process</p> <p>4.3 Negotiate <b>conditions</b> of the agreement, outline a summary of the agreement to the buyer, and confirm the buyer's decision</p> <p>4.4 Provide advice on financing arrangements if required</p> <p>4.5 Prepare and complete sales documents, and process and monitor client order</p> <p>4.6 Identify and present cross-selling opportunities to the buyer</p>
5. Support post-sale activities	<p>5.1 Ensure contact is made with the buyer post-sale to ensure agreed expectations have been met</p> <p>5.2 Provide technical assistance or advice and assist clients to access appropriate after-sales support</p> <p>5.3 Use <b>feedback solicitation methods</b> on the sales process and product satisfaction</p> <p>5.4 Address and resolve service problems and difficulties identified through feedback</p> <p>5.5 Develop and implement <b>client loyalty strategies</b> to secure buyer loyalty and facilitate ongoing contact</p> <p>5.6 Offer and implement additional sales solutions and benefits to clients when opportunities arise</p>

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- learning skills to develop and maintain knowledge of products, ideas and services for use within a sales presentation
- literacy and numeracy skills to:
  - prepare sales documentation
  - process sales transactions
  - calculate financing arrangements
  - keep client sales records
  - use sales statistics to support a verbal argument
- organisational and time-management skills to schedule follow-up contacts
- verbal communication skills to:
  - demonstrate how product benefits and key features fulfil buyers' needs
  - develop rapport and build relationships with clients
  - manage conflict and customer dissatisfaction
  - negotiate to manage buyer resistance
  - question clients to determine client needs and preferences
  - use persuasive and assertive language in promoting product features and benefits
- technological skills to use equipment to assist in presenting sales information.

### Required knowledge

- detailed product knowledge, including product:
  - advantages and disadvantages
  - features
  - service benefits
- identification and overview knowledge of key provisions of relevant legislation and codes of practice that relate to sales, for example:
  - anti-discrimination
  - ethical principles
  - consumer protection
  - contract law
  - privacy laws
- materials and aids that support presentations
- Competition and Consumer Act 2010
- organisational policies and procedures relating to orders and client services
- principles of achieving an effective sales presentation mix
- statistical methods to demonstrate sales performance
- strategies to manage client accounts, to build client goodwill and to develop client loyalty.

## Evidence Guide

*The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>demonstration of principles of effective sales presentation mix and sales closure techniques through presentation of a sales solution</li> <li>demonstration of support for post-sale activities.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> <li>a workplace or simulated work environment</li> <li>product information and sales records and documentation</li> <li>office equipment, machines and sales support materials to make a presentation.</li> </ul>
<b>Method of assessment</b>	<p>The following assessment method is appropriate for this unit:</p> <ul style="list-style-type: none"> <li>analysis of responses to case studies and scenarios</li> <li>observations of presentations of sales solutions</li> <li>direct questioning combined with portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate</li> <li>oral or written questioning to assess knowledge of sales tactic options, proposed sales solutions and ways to overcome buyer resistance</li> <li>observation of persuasive communication techniques and listening skills used when presenting a sales solution and closing a sale</li> <li>review of sales aids identified, selected and used</li> <li>evaluation of strategies implemented to manage buyer resistance.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>Sales aids</i></b> may include:	<ul style="list-style-type: none"> <li>• drawings</li> <li>• electronic media</li> <li>• graphs</li> <li>• models</li> <li>• photographs</li> <li>• printed materials</li> <li>• products</li> <li>• product samples</li> <li>• transparencies</li> <li>• whiteboards.</li> </ul>
<b><i>Proof of benefits</i></b> may include:	<ul style="list-style-type: none"> <li>• anecdotes and examples</li> <li>• comparisons</li> <li>• statistics</li> <li>• testimonials.</li> </ul>
<b><i>Verbal buying signals</i></b> of the prospect may include:	<ul style="list-style-type: none"> <li>• confirmations</li> <li>• questions</li> <li>• statements of requirement.</li> </ul>
<b><i>Non-verbal buying signals</i></b> of the prospect may include:	<ul style="list-style-type: none"> <li>• close examination of the product</li> <li>• moving closer to where a product is to be installed</li> <li>• smiling and nodding.</li> </ul>
<b><i>Source of buyer resistance</i></b> may include:	<ul style="list-style-type: none"> <li>• company resistance</li> <li>• no perceived need</li> <li>• price resistance</li> <li>• salesperson resistance</li> <li>• service dissatisfaction</li> <li>• timing issues</li> <li>• uncertainty about the product.</li> </ul>
<b><i>Buyer resistance strategies</i></b> may include:	<ul style="list-style-type: none"> <li>• assertive messages</li> <li>• boomerang</li> <li>• checking perceptions</li> <li>• direct denial</li> <li>• incentives offer</li> <li>• indirect denial</li> </ul>

	<ul style="list-style-type: none"> <li>• requesting additional information from buyers</li> <li>• open and closed questions</li> <li>• superior benefit</li> <li>• trial offer.</li> </ul>
<b>Formal close</b> may include:	<ul style="list-style-type: none"> <li>• inducement</li> <li>• narrative close</li> <li>• offering alternative choices</li> <li>• salesperson request to the prospect to agree to purchase the product or service</li> <li>• summary of product benefits.</li> </ul>
<b>Conditions</b> may include:	<ul style="list-style-type: none"> <li>• client loyalty</li> <li>• delivery</li> <li>• length of contract</li> <li>• payment options</li> <li>• price.</li> </ul>
<b>Feedback solicitation methods</b> may include:	<ul style="list-style-type: none"> <li>• email dialogue</li> <li>• focus groups</li> <li>• one-on-one interviews</li> <li>• surveys</li> <li>• telephone interviews.</li> </ul>
<b>Client loyalty strategies</b> may include:	<ul style="list-style-type: none"> <li>• client clubs</li> <li>• client reward schemes</li> <li>• credit or discount facilities</li> <li>• formal letter of thanks</li> <li>• handwritten note thanking the client</li> <li>• offering promotional items</li> <li>• phone call thanking the client for the business.</li> </ul>

## Unit Sector(s)

Business development - sales

## BSBSMB407A Manage a small team

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to plan for the management of and to manage staff. It involves industrial relations, staff selection, staff records, induction, training, team development and career planning to enhance business operations through retaining a competent, committed and motivated team in the workplace.</p> <p>Specific legal requirements apply to the management of a small business.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This work is undertaken by individuals who operate a small business.</p> <p>The unit is suitable for existing micro and small businesses or a department in a larger organisation.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>	

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop staffing plan	<p>1.1.Determine <i>staffing requirements</i> to allow the business to run effectively, in accordance with the business requirements as outlined in the business plan</p> <p>1.2.Identify and compare the existing skills/competencies of owner/s and staff with business requirements to identify any gaps</p> <p>1.3.Develop <i>policies and procedures</i> for owner/s and staff, in accordance with the business plan</p>
2. Recruit, induct, train and retain the team	<p>2.1.Develop job/position descriptions, competencies required and selection criteria to meet the needs of the business</p> <p>2.2.Judge information obtained from each candidate against specified selection criteria and decide selection in accordance with business needs and legal requirements</p> <p>2.3.Induct new staff members in accordance with the policies and procedures of the business</p> <p>2.4.Make team members aware of their responsibilities and performance requirements as soon as practicable and take opportunities to coach team members who are unfamiliar with the procedures of the business</p> <p>2.5.Develop and implement a <i>staff development program and career paths</i> based on the requirements of business and staff competencies</p> <p>2.6.<i>Advertise staff vacancies</i> appropriately in accordance with staffing plan</p>
3. Comply with INDUSTRIAL RELATIONS obligations	<p>3.1.Clarify workplace rights and obligations of employers and employees, in accordance with <i>legal requirements and codes of practice</i></p> <p>3.2.Counsel staff, if required, in a positive and constructive manner and record outcomes accurately</p>
4. Maintain staff records	<p>4.1.Develop <i>staff records system</i> to provide timely and accurate information, in accordance with confidentiality, legal and taxation requirements</p> <p>4.2.Monitor and accurately maintain the system for recording and retrieving personnel and payroll information and seek specialist advice where required</p>
5. Manage staff	<p>5.1.Regularly review contribution and skills of self and</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>other team members to ensure performance is in line with agreed <i>performance measures</i></p> <p>5.2. Monitor and adjust staffing requirements to respond to any changes in tasks and functions required by the business</p> <p>5.3. Support and encourage staff, and acknowledge and reward their contribution to the business</p> <p>5.4. Regularly provide opportunities for staff to discuss work related issues</p> <p>5.5. Develop <i>contingency plans</i> to cope with unexpected or extreme situations and take appropriate corrective action as required</p>
6. Review team performance	<p>6.1. Develop positive and constructive relationships with and between <i>team members</i></p> <p>6.2. Review and update team objectives in support of business goals on a regular basis in consultation with team members</p> <p>6.3. Identify strengths and weaknesses of team against current and expected work requirements</p> <p>6.4. Schedule time, on a regular basis, for team members to review work operations in order to maintain and improve operational efficiency</p> <p>6.5. Encourage team members to monitor their own performance, suggest improvements and to identify professional development needs, in accordance with personal and business requirements</p> <p>6.6. Monitor and review staff turnover rate</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- analytical skills to identify workplace skill gaps
- coaching skills
- communication skills to relate to staff
- conflict resolution skills
- literacy skills to interpret legal requirements, to compile reports and to prepare a job/position description
- team building and motivation skills.

#### Required knowledge

- commonwealth, state/territory and local government legislative requirements relating to business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal employment opportunity (EEO), industrial relations and anti-discrimination
- OHS responsibilities and procedures for managing hazards
- relevant industry awards/enterprise agreements
- staff development and career planning
- staff counselling, grievance and disciplinary procedures
- unfair dismissal legislation and procedures.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>managing a small team including staff selection, staff records, induction, training and development</li> <li>developing and maintaining team performance to enhance business operations</li> <li>knowledge of relevant legislative requirements affecting business operation.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>access to relevant documentation</li> <li>candidate's individual circumstances and work in the context of running a small business, are the basis for assessment.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>portfolio of evidence including staff policies and records, and contingency plans</li> <li>oral or written questioning to assess knowledge of staff recruitment procedures, staff development and review programs</li> <li>review of job/position descriptions and selection criteria developed</li> <li>review of documentation monitoring and reviewing staff turnover rate.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>BSBSMB405A Monitor and manage small business operations.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Staffing requirements</i> may include:	<ul style="list-style-type: none"> <li>• full-time, part-time, permanent, temporary or casual</li> <li>• number of staff</li> <li>• responsibilities, competencies required</li> <li>• self, other owners, family and/or friends</li> <li>• sub-contractors or external advisors/consultants</li> <li>• time commitment, performance expectations</li> </ul>
<i>Policies and procedures</i> must include:	<ul style="list-style-type: none"> <li>• complaint and grievance procedures</li> <li>• culturally appropriate entitlements e.g. funeral leave, national/religious days</li> <li>• culturally appropriate procedures e.g. how business will enact cultural requirements for relationships between owner/operator, employees and service providers</li> <li>• employment conditions, equal opportunity, anti-discrimination, cultural diversity</li> <li>• induction and training</li> <li>• OHS</li> <li>• recruitment and selection</li> <li>• performance measures</li> <li>• professional development</li> </ul>
<i>Staff development program and career paths</i> may include	<ul style="list-style-type: none"> <li>• attendance at courses</li> <li>• career planning</li> <li>• coaching</li> <li>• flexible learning</li> <li>• job rotation</li> <li>• mentoring</li> <li>• on-the-job training</li> <li>• professional development</li> <li>• staff exchanges</li> <li>• succession planning</li> </ul>
<i>Advertising staff vacancies</i> may	<ul style="list-style-type: none"> <li>• electronic (radio, television and internet)</li> </ul>

<b>RANGE STATEMENT</b>	
include:	<ul style="list-style-type: none"> <li>• noticeboards</li> <li>• print media</li> <li>• word-of-mouth</li> </ul>
<b><i>Industrial relations</i></b> may include:	<ul style="list-style-type: none"> <li>• awards and/or industrial agreements and relevant industrial instruments</li> <li>• counselling, dismissal procedures</li> </ul>
<b><i>Legal requirements and codes of practice</i></b> may include:	<ul style="list-style-type: none"> <li>• award and enterprise agreements and relevant industrial instruments</li> <li>• commonwealth, state/territory and local government legislative requirements affecting business operation, especially in regard to OHS and environmental issues, EEO, industrial relations and anti-discrimination</li> <li>• relevant industry codes of practice</li> </ul>
<b><i>Staff records system</i></b> must include:	<ul style="list-style-type: none"> <li>• disciplinary and grievance procedures</li> <li>• employee records (including tax file number, remuneration, leave and training records)</li> <li>• job/position descriptions</li> <li>• OHS record</li> <li>• records of taxation and superannuation payments made</li> </ul>
<b><i>Performance measures</i></b> may include:	<ul style="list-style-type: none"> <li>• overall staff productivity</li> <li>• percentage of chargeable hours/days per week</li> <li>• performance of key people</li> <li>• ratio of direct workers to those who support, supervise or manage them</li> <li>• ratio of sales dollars per employee</li> <li>• staff morale, work ethic, work satisfaction</li> </ul>
<b><i>Contingency plans</i></b> may include:	<ul style="list-style-type: none"> <li>• accidents or emergencies</li> <li>• environmental issues</li> <li>• fluctuating workloads</li> <li>• OHS</li> <li>• unpredicted customer demand/busy periods</li> <li>• unpredicted staff shortages</li> </ul>
<b><i>Team members</i></b> may include:	<ul style="list-style-type: none"> <li>• employees, trainees/apprentices, sub-contractors or external advisers/consultants</li> <li>• owner/s, partners, family members</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Management and Leadership - Small and Micro Business
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**Co-requisite units**

<b>Co-requisite units</b>		

## BSBWHS301A Maintain workplace safety

### Modification History

Release	Comments
Release 1	<p>This Unit first released with <i>BSB07 Business Training Package version 7.0</i>.</p> <p>Replaces and is equivalent to BSBCMN311B Maintain workplace safety.</p>

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to implement and monitor the organisation's work health and safety (WHS) policies, procedures and programs as part of a small work team.

### Application of the Unit

This unit applies to workers who have a key role in maintaining workplace safety in an organisation. In their role they closely monitor aspects of work associated with the safe delivery of products and services, and they have an important responsibility in influencing ongoing safety in the workplace.

At this level, work will normally be carried out within known routines, methods and procedures but may also involve a number of complex or non-routine activities that require some discretion and judgement.

*NOTE: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.*

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

## Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Assist with incorporating WHS policies and procedures into work team processes	<p>1.1 Use <b>WHS legislation</b> as the basis for meeting the health and safety requirements of a small work team</p> <p>1.2 Assist in providing and clearly explaining information to the work team about the organisation's <b>WHS policies, procedures, programs and legislative requirements</b>, including the legal duties, powers, rights, obligations and responsibilities of individuals and parties inside and outside the workplace</p> <p>1.3 Assist in regularly providing and clearly explaining information to the work team about <b>identifying hazards</b> and the outcomes of <b>risk assessment</b></p>
2. Support participative arrangements for managing WHS	<p>2.1 Implement and monitor <b>organisational consultative procedures</b> to facilitate participation of the work team in managing work area hazards</p> <p>2.2 Promptly deal with issues raised through consultation according to organisational procedures for issue resolution</p> <p>2.3 Encourage and assist work team members to contribute to managing WHS</p> <p>2.4 Engage with individuals and work teams to identify and implement improvements in managing WHS feedback</p>
3. Support the organisation's procedures for providing WHS training	<p>3.1 Provide advice on <b>WHS training needs</b> of individuals and the work team</p> <p>3.2 Provide advice on strategies and opportunities for developing work team's WHS competence</p> <p>3.3 Provide <b>coaching and mentoring assistance</b> to work team members to support the effective development of individual and team WHS competence</p>
4. Participate in identifying hazards, and assessing and controlling risks for the work area	<p>4.1 Provide advice on <b>hazards in the work area</b> according to organisational policies and procedures, and WHS legal requirements</p> <p>4.2 Support the implementation of <b>procedures to control risks</b> using the hierarchy of control and according to organisational procedures and WHS legal requirements</p> <p>4.3 Identify and report inadequacies in existing risk control measures according to organisational procedures, the hierarchy of control and WHS legal requirements</p> <p>4.4 Accurately complete and maintain WHS incident records in the work area according to organisational procedures and WHS legislative requirements</p>

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- analytical skills to:
  - assess resources required to apply risk controls
  - assist with environmental monitoring
  - identify hazards and assess risks appropriate to own work area and job role
  - monitor incidents and hazards
  - evaluate effectiveness of risk controls
- coaching and mentoring skills to provide support to colleagues
- communication skills to communicate with people from a range of backgrounds and with a range of abilities
- literacy skills to understand workplace procedures and work instructions for identifying and reporting hazards, and for interpreting WHS signs and symbols.

### Required knowledge

- characteristics and composition of the work team
- hazards and associated risks in the workplace
- organisational policies and procedures relating to WHS, including hazard management, fire, emergencies, evacuation, incident investigation and reporting
- relevant Acts, regulations and codes of practice from all levels of government that impact on business operations, especially with regard to WHS and environmental issues, equal opportunity, industrial relations and anti-discrimination
- WHS aspects of other organisational systems and procedures.

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"><li>• implementing organisational management systems and WHS procedures in own work area</li><li>• understanding of and meeting WHS legal and organisational requirements as they apply to own work area and job role</li><li>• knowledge of procedures for identifying hazards in the work area</li><li>• knowledge of procedures for assessing and controlling risks to health and safety associated with those hazards according to organisational WHS procedures.</li></ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"><li>• safety processes relevant to the area of work</li><li>• relevant information and documentation on compliance requirements, such as:<ul style="list-style-type: none"><li>• organisational policies and procedures, standard operating procedures and plans</li><li>• relevant Acts, regulations, codes of practice, licensing requirements and standards</li></ul></li><li>• relevant internal and external information</li><li>• appropriate office equipment and resources used in the identification and rectification of WHS compliance breaches.</li></ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"><li>• direct questioning combined with review of portfolios of evidence and third-party reports of on-the-job performance by the candidate</li><li>• review of documents on WHS Acts, regulations, codes of practice, standards, policies and</li></ul>

	<p>procedures developed and communicated to workers</p> <ul style="list-style-type: none"><li>• analysis of responses to case studies and scenarios</li><li>• demonstration of applying WHS legislation</li><li>• oral or written questioning to assess knowledge of research and data-collection methods to obtain evidence of compliance with WHS legislation</li><li>• assessment of duty of care arrangements.</li></ul>
<b>Guidance information for assessment</b>	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>WHS legislation</i></b> may include:	<ul style="list-style-type: none"> <li>• WHS Acts, regulations and codes of practice</li> <li>• components of Acts and regulations, such as: <ul style="list-style-type: none"> <li>• dangerous goods</li> <li>• environmental protection</li> <li>• equal opportunity and anti-discrimination</li> <li>• industrial relations</li> <li>• privacy</li> <li>• workers' compensation.</li> </ul> </li> </ul>
<b><i>WHS policies, procedures, programs and legislative requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• consultative arrangements for workers in the work area</li> <li>• emergency plan and procedures</li> <li>• first aid provision, and medical practitioner contact and attention</li> <li>• hazard reporting procedures</li> <li>• incident investigation</li> <li>• plant and equipment maintenance and use</li> <li>• procedures for hazard identification</li> <li>• procedures for risk assessment, and the selection and implementation of risk control measures</li> <li>• purchasing policy and procedures</li> <li>• safe operating procedures and instructions</li> <li>• site access and egress</li> <li>• transport and storage of dangerous goods</li> <li>• use and care of personal protective equipment</li> <li>• use and storage of hazardous substances</li> <li>• WHS arrangements for on-site contractors, visitors and members of the public</li> <li>• WHS audits and safety inspections.</li> </ul>
<b><i>Individuals and parties</i></b> may include:	<ul style="list-style-type: none"> <li>• contractors and subcontractors</li> <li>• customers</li> <li>• persons conducting businesses or undertakings (PCBUs) or their officers</li> <li>• workers</li> <li>• other persons at a workplace</li> </ul>

	<ul style="list-style-type: none"> <li>• WHS entry permit holders</li> <li>• WHS inspectors</li> <li>• WHS regulators.</li> </ul>
Methods for <i>identifying hazards</i> and <i>risk assessment</i> include:	<ul style="list-style-type: none"> <li>• as specified in WHS Acts, regulations and codes of practice</li> <li>• checking equipment before and during work</li> <li>• consulting work team members</li> <li>• housekeeping</li> <li>• reviewing records, for example:               <ul style="list-style-type: none"> <li>• equipment maintenance</li> <li>• hazardous chemicals, including labels and safety data sheet (SDS) register, and dangerous goods storage list</li> <li>• injury</li> <li>• training plan</li> </ul> </li> <li>• workplace inspections in area of responsibility.</li> </ul>
<i>Organisational consultative procedures</i> may include:	<ul style="list-style-type: none"> <li>• attendance of health and safety representatives at management meetings</li> <li>• counselling and disciplinary processes</li> <li>• early response to worker suggestions, requests, reports and concerns put forward to management</li> <li>• formal and informal meetings</li> <li>• health and safety committees</li> <li>• other committees, for example planning and purchasing.</li> </ul>
<i>WHS training needs</i> may include:	<ul style="list-style-type: none"> <li>• coaching, mentoring and/or supervision</li> <li>• formal and informal learning programs</li> <li>• internal and external training programs</li> <li>• personal study.</li> </ul>
<i>Coaching and mentoring assistance</i> may include:	<ul style="list-style-type: none"> <li>• explaining and clarifying</li> <li>• presenting and promoting a safe workplace</li> <li>• problem solving</li> <li>• providing encouragement</li> <li>• providing feedback to another team member</li> <li>• respecting the contribution of all participants and giving credit for achievements.</li> </ul>

<p><b><i>Hazards in the work area</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• anything that has the potential to cause harm</li> <li>• as specified in WHS Acts, regulations and codes of practice</li> <li>• blocked exits</li> <li>• ergonomically unsuitable workstations and task design, for example:             <ul style="list-style-type: none"> <li>• repetitive work</li> <li>• poor lighting or glary surfaces</li> <li>• non-adjustable work surfaces and seating</li> </ul> </li> <li>• internal or external threat of occupational violence or bullying</li> <li>• lack of adequate storage</li> <li>• reliance on low order control measure (such as personal protective equipment) to reduce worker risk exposure, instead of controlling the hazard itself</li> <li>• slippery and uneven floors</li> <li>• unguarded and poorly maintained machinery and equipment</li> <li>• unlabelled chemicals and substances</li> <li>• untidy or noisy work areas.</li> </ul>
<p><b><i>Procedures to control risks</i></b> may include actions, such as:</p>	<ul style="list-style-type: none"> <li>• as specified in WHS Acts, regulations and codes of practice</li> <li>• application of the hierarchy of control, namely:             <ul style="list-style-type: none"> <li>• eliminate the risk</li> <li>• reduce or minimise the risk through:                 <ul style="list-style-type: none"> <li>• engineering controls</li> <li>• administrative controls</li> <li>• personal protective equipment</li> </ul> </li> </ul> </li> <li>• regular consultation with workers.</li> </ul>

## Unit Sector(s)

Regulation, Licensing and Risk – Work Health and Safety

## BSBWHS401A Implement and monitor WHS policies, procedures and programs to meet legislative requirements

### Modification History

Release	Comments
Release 1	<p>This Unit first released with <i>BSB07 Business Training Package version 7.0</i>.</p> <p>Replaces BSBOHS407A Monitor a safe workplace.</p>

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to implement and monitor the organisation's work health and safety (WHS) policies, procedures and programs in the relevant work area in order to meet legislative requirements.

### Application of the Unit

This unit applies to workers with supervisory responsibilities for implementing and monitoring the organisation's WHS policies, procedures and programs in a work area.

The unit applies to individuals with a broad knowledge of WHS policies who contribute well-developed skills in creating solutions to unpredictable problems through analysis and evaluation of information from a variety of sources. These workers provide supervision and guidance to others and have limited responsibility for the output of others.

*NOTE: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.*

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

## Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Provide information to the work team about WHS policies and procedures	<p>1.1 Accurately explain to the work team, relevant provisions of <b>WHS Acts, regulations and codes of practice</b></p> <p>1.2 Provide information about the <b>organisation's WHS policies, procedures and programs</b>, and ensure it is readily accessible to and understandable by the work team</p> <p>1.3 Regularly provide and clearly explain to the work team, <b>information</b> about identified hazards and the outcomes of risk assessment and control</p>
2. Implement and monitor participation arrangements for managing WHS	<p>2.1 Communicate to workplace parties the importance of effective consultation mechanisms in managing health and safety risks in the workplace</p> <p>2.2 Apply <b>consultation procedures</b> to facilitate participation of the work team in managing work area hazards</p> <p>2.3 Promptly deal with issues raised through consultation, according to organisational consultation procedures and WHS legislative and regulatory requirements</p> <p>2.4 Promptly record and communicate to the work team the outcomes of consultation over WHS issues</p>
3. Implement and monitor organisational procedures for providing WHS training	<p>3.1 Identify WHS training needs according to organisational requirements, and WHS legislative and regulatory requirements</p> <p>3.2 Make arrangements to meet WHS training needs of team members in consultation with relevant individuals</p> <p>3.3 Provide workplace learning opportunities, and coaching and mentoring assistance, to facilitate team and individual achievement of identified WHS training needs</p> <p>3.4 Identify and report to management the costs associated with providing training for work team, for inclusion in financial and management plans</p>
4. Implement and monitor organisational procedures and legal requirements for identifying hazards and assessing and controlling risks	<p>4.1 Identify and report on hazards in work area according to WHS policies and procedures, and WHS legislative and regulatory requirements</p> <p>4.2 Promptly action team member hazard reports according to organisational procedures and WHS legislative and regulatory requirements</p> <p>4.3 Implement <b>procedures to control risks</b> using the hierarchy of control, according to organisational and WHS legislative requirements</p> <p>4.4 Identify and report inadequacies in existing risk controls according to hierarchy of control and WHS legislative</p>

	requirements  4.5 Monitor outcomes of reports on inadequacies, where appropriate, to ensure a prompt organisational response
5. Implement and monitor organisational procedures for maintaining WHS records for the team	5.1 Accurately complete and maintain <b>WHS records</b> of incidents of occupational injury and disease in work area, according to WHS policies, procedures and legislative requirements  5.2 Use aggregate information and data from work area records to identify hazards and monitor risk control procedures in work area

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- analytical and problem solving skills to:
  - identify hazards
  - assess risks in the work area
  - review information relating to monitoring and evaluating incidents, and the effectiveness of risk controls
- coaching and mentoring skills to provide support to colleagues
- literacy skills to understand and interpret documentation, and to interpret WHS requirements.

### Required knowledge

- hazards and associated risks in the workplace
- key provisions of relevant WHS Acts, regulations and codes of practice that apply to the business
- organisational policies and procedures relating to hazard management, fire, emergency, evacuation, incident investigation and reporting
- relevance of consultation and participation as key mechanisms for improving WHS and culture
- WHS legislative responsibilities, duties and obligations of managers, supervisors, persons conducting businesses or undertakings (PCBUs) or their officers, and workers in the workplace.

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"><li>• applying organisational WHS management systems and procedures in the work team area</li><li>• applying procedures for assessing and controlling risks to health and safety associated with those hazards, according to the hierarchy of control and as specified in commonwealth and state or territory WHS Acts, regulations and codes of practice</li><li>• providing specific, clear and accurate information and advice on workplace hazards to work team</li><li>• knowledge of legal responsibilities of managers, supervisors, PCBU's or their officers and workers in the workplace.</li></ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"><li>• an actual workplace or simulated environment</li><li>• office equipment and resources</li><li>• examples of documentation relating to hazards in the workplace</li><li>• examples of documents relating to workplace safety, hazard identification and risk assessment.</li></ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"><li>• direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate</li><li>• review of records communicating the outcomes of consultation over WHS issues to the work team</li><li>• analysis of responses to case studies and scenarios</li><li>• review of reports to management on the costs associated with providing training for the work team</li></ul>

	<ul style="list-style-type: none"><li>• oral or written questioning to assess knowledge of workplace safety and hazards</li><li>• examples of risk assessments</li><li>• evaluation of actioning of team member hazard reports</li><li>• review of WHS records of occupational injury and disease incidents in work area.</li></ul>
<b>Guidance information for assessment</b>	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<p><b><i>WHS Acts, regulations and codes of practice</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• applicable commonwealth and state or territory WHS Acts, regulations and codes of practice</li> <li>• common law duties to meet general duty of care requirements</li> <li>• duty holders, as specified in WHS Acts: <ul style="list-style-type: none"> <li>• PCBUs or their officers</li> <li>• workers</li> <li>• other persons at a workplace</li> </ul> </li> <li>• WHS legislative and regulatory requirements for effective management of hazards</li> <li>• WHS legislative and regulatory requirements for establishing consultation arrangements, including those for health and safety representatives and health and safety committees</li> <li>• WHS legislative and regulatory requirements for providing information and training, including: <ul style="list-style-type: none"> <li>• training in safe operating procedures</li> <li>• procedures for workplace hazards</li> <li>• hazard identification</li> <li>• risk assessment and risk control</li> <li>• emergency and evacuation procedures</li> </ul> </li> <li>• WHS legislative, regulatory and other requirements for the maintenance and confidentiality of records of occupational injury and disease.</li> </ul>
<p><b><i>Organisation's WHS policies, procedures and programs</i></b> may address:</p>	<ul style="list-style-type: none"> <li>• acquisition, use, storage and disposal of hazardous chemicals</li> <li>• alcohol and other drug intoxication</li> <li>• consultation arrangements for workers in work area</li> <li>• emergency and evacuation procedures</li> <li>• family-friendly environment</li> <li>• first aid provision and medical treatment</li> <li>• hazard reporting procedures</li> <li>• incident investigation</li> <li>• life-work balance strategies</li> <li>• maintenance and use of plant and equipment</li> </ul>

	<ul style="list-style-type: none"> <li>• procedures for hazard identification</li> <li>• procedures for risk assessment, and selection and implementation of risk controls</li> <li>• purchasing policy and procedures</li> <li>• requirements of applicable commonwealth and state or territory WHS Acts, regulations and codes of practice</li> <li>• safe operating procedures and instructions</li> <li>• site access and egress</li> <li>• transport and storage of dangerous goods</li> <li>• use and care of personal protective equipment</li> <li>• WHS arrangements for on-site contractors and subcontractors, visitors and members of the public</li> <li>• WHS audits and inspections.</li> </ul>
<b>Information</b> may result from:	<ul style="list-style-type: none"> <li>• examining commonwealth and state or territory WHS Acts, regulations and codes of practice</li> <li>• checking equipment before and during work</li> <li>• consulting work team members through daily informal worker consultation and regular formal meetings</li> <li>• housekeeping</li> <li>• reviewing health and safety records, including hazard reports, hazardous substances and dangerous goods registers, and injury records</li> <li>• WHS audits and review of audit reports</li> <li>• workplace inspections in area of responsibility.</li> </ul>
<b>Consultation procedures</b> may include:	<ul style="list-style-type: none"> <li>• attendance of health and safety representatives at management and WHS planning meetings</li> <li>• early response to worker suggestions, requests, reports and concerns put forward to management</li> <li>• election of health and safety representatives according to legislative requirements</li> <li>• formal and informal meetings</li> <li>• health and safety committees</li> <li>• individual performance management processes</li> <li>• other committees, for example planning and purchasing</li> <li>• requirements as specified in commonwealth and state or territory WHS Acts, regulations and codes of practice.</li> </ul>
<b>Procedures to control risks</b> may include:	<ul style="list-style-type: none"> <li>• as specified in commonwealth and state or territory WHS Acts, regulations and codes of practice</li> <li>• consultation with workers and their representatives</li> <li>• redesign of job, process or workplace, for example:</li> </ul>

	<ul style="list-style-type: none"> <li>• introducing mechanical handling equipment</li> <li>• raising or lowering work platforms</li> <li>• rearranging material flow, timing and/or scheduling</li> <li>• removing the cause of a risk at its source (eliminating the hazard), for example removing stored goods permanently from emergency exit passageways</li> <li>• selecting controls according to the hierarchy of risk control, for example working through the hierarchy from the most effective to least effective control.</li> </ul>
<b>WHS records</b> may include:	<ul style="list-style-type: none"> <li>• any record of alcohol or drug use</li> <li>• as specified in commonwealth and state or territory WHS Acts, regulations and codes of practice</li> <li>• audit and inspection reports</li> <li>• consultation, for example: <ul style="list-style-type: none"> <li>• meetings of health and safety committees</li> <li>• work team meeting agendas, including WHS items and actions</li> </ul> </li> <li>• first aid/medical post records</li> <li>• hazardous chemicals registers</li> <li>• induction, instruction and training</li> <li>• manufacturer and supplier information, including dangerous goods storage lists</li> <li>• plant and equipment maintenance and testing reports</li> <li>• workers' compensation and rehabilitation records</li> <li>• workplace environmental monitoring records.</li> </ul>

## Unit Sector(s)

Regulation, Licensing and Risk – Work Health and Safety

## BSBWHS501A Ensure a safe workplace

### Modification History

Release	Comments
Release 1	<p>This Unit first released with <i>BSB07 Business Training Package version 7.0</i>.</p> <p>Replaces and is equivalent to BSBOHS509A Ensure a safe workplace.</p>

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to establish, maintain and evaluate the organisation's work health and safety (WHS) policies, procedures and programs in the relevant work area according to WHS legislative requirements.

### Application of the Unit

This unit applies to managers working in a range of contexts. It takes a systems approach and addresses compliance with relevant legislative requirements.

Those who have or are likely to have responsibility for WHS as part of their broader management role should undertake this unit.

The unit is relevant for people with obligations under WHS legislation, for example persons conducting a business or undertaking (PCBUs) or their officers (as defined by relevant legislation).

*NOTE: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.*

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

## Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Establish and maintain a WHS management system	<p>1.1 Locate, adapt, adopt and communicate WHS policies that clearly define the organisation's commitment to complying with <b>WHS legislation</b></p> <p>1.2 Identify <b>duty holders</b> and define WHS responsibilities for all workplace personnel according to WHS legislation, policies, procedures and programs</p> <p>1.3 Identify and approve financial and human resources required by the WHS management system (WHSMS)</p>
2. Establish and maintain effective and compliant participation arrangements for managing WHS	<p>2.1 Work with workers and their representatives to set up and maintain participation arrangements according to relevant WHS legislation</p> <p>2.2 Appropriately resolve issues raised through participation and consultation arrangements according to relevant WHS legislation</p> <p>2.3 Promptly provide information about the outcomes of participation and consultation to workers and ensure it is easy for them to access and understand</p>
3. Establish and maintain procedures for effectively identifying hazards, and assessing and controlling risks	<p>3.1 Develop procedures for ongoing hazard identification, and assessment and <b>control of associated risks</b></p> <p>3.2 Include hazard identification at the planning, design and evaluation stages of any change in the workplace to ensure that new hazards are not created by the proposed changes and existing hazards are controlled</p> <p>3.3 Develop and maintain procedures for selecting and implementing risk controls according to the hierarchy of control and WHS legislative requirements</p> <p>3.4 Identify inadequacies in existing risk controls according to the hierarchy of control and WHS legislative requirements, and promptly provide resources to enable implementation of new measures</p> <p>3.5 Identify requirements for expert WHS advice, and request this advice as required</p>
4. Evaluate and maintain a WHS management system	<p>4.1 Develop and provide a WHS induction and training program for all workers as part of the organisation's training program</p> <p>4.2 Use a system for <b>WHS recordkeeping</b> to allow identification of patterns of occupational injury and disease in the organisation, and to maintain a record of WHS decisions made, including reasons for the decision</p> <p>4.3 Measure and evaluate the WHSMS in line with the organisation's quality systems framework</p>

	<p>4.4 Develop and implement improvements to the WHSMS to achieve organisational WHS objectives</p> <p>4.5 Ensure compliance with the WHS legislative framework so that, as a minimum, WHS legal requirements are achieved</p>
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## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- analytical and problem solving skills to examine relevant workplace information and data to identify hazards, and to assess and control risks
- communication skills to consult with staff and to promote a safe workplace
- information technology skills to store and retrieve relevant workplace information and data
- literacy skills to adapt and communicate WHS policies that reflect WHS legislative requirements
- problem-solving skills to deal with complex and non-routine difficulties.

### Required knowledge

- hazard identification and risk-management processes
- hierarchy of risk control
- in-house and WHS legislative reporting requirements
- relevant WHS Acts, regulations and codes of practice that apply to the business operation.

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• detailed knowledge and application of all relevant WHS Acts, regulations and codes of practice</li> <li>• establishing and maintaining arrangements for managing WHS within the organisation's business systems and practices</li> <li>• identifying requirements for expert WHS advice.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> <li>• appropriate documentation and resources normally used in the workplace.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• analysis of responses to case studies and scenarios</li> <li>• assessment of written reports</li> <li>• demonstration of techniques</li> <li>• direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate</li> <li>• review of WHS policies, information provided on the WHSMS, and information about the outcomes of participation and consultation provided to workers</li> <li>• oral or written questioning to assess knowledge of WHS and WHS legislation</li> <li>• evaluation of WHS induction and training</li> <li>• review of WHS recordkeeping system.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>



## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>WHS legislation</i></b> may include:	<ul style="list-style-type: none"> <li>• applicable commonwealth and state or territory WHS Acts, regulations and codes of practice</li> <li>• common law duties to meet general duty of care requirements</li> <li>• WHS legislative and regulatory requirements for: <ul style="list-style-type: none"> <li>• effectively managing hazards</li> <li>• establishing consultation arrangements, including those for health and safety representatives and health and safety committees</li> <li>• providing information and training, including training in safe operating procedures; procedures for workplace hazards; hazard identification, risk assessment and risk control; and emergency and evacuation procedures</li> </ul> </li> <li>• WHS legislative, regulatory and other requirements for the maintenance and confidentiality of records of occupational injury and disease.</li> </ul>
<b><i>Duty holders</i></b> may include:	<ul style="list-style-type: none"> <li>• as specified in WHS Acts: <ul style="list-style-type: none"> <li>• officers</li> <li>• PCBU's or their officers</li> <li>• workers</li> <li>• other persons at a workplace.</li> </ul> </li> </ul>
<b><i>Control of associated risks</i></b> may include:	<ul style="list-style-type: none"> <li>• administrative</li> <li>• as specified in WHS Acts, regulations and codes of practice</li> <li>• counselling/disciplinary processes, such as those associated with alcohol and other drugs</li> <li>• education about alcohol and other drugs work-related issues</li> <li>• engineering</li> <li>• hazard elimination</li> <li>• housekeeping and storage</li> <li>• issue resolution</li> <li>• personal protective equipment</li> </ul>

	<ul style="list-style-type: none"><li>• purchasing of supplies and equipment</li><li>• workplace inspections, including plant and equipment.</li></ul>
<b>WHS recordkeeping</b> may relate to:	<ul style="list-style-type: none"><li>• audit and inspection reports</li><li>• consultation, such as:<ul style="list-style-type: none"><li>• meetings of health and safety committees</li><li>• work team meeting agendas, including WHS items and actions</li></ul></li><li>• first aid/medical post records</li><li>• hazardous chemicals registers</li><li>• induction, instruction and training</li><li>• manufacturer and supplier information, including dangerous goods storage lists</li><li>• plant and equipment maintenance and testing reports</li><li>• workers' compensation and rehabilitation records</li><li>• workplace environmental monitoring records.</li></ul>

## Unit Sector(s)

Regulation, Licensing and Risk – Work Health and Safety

## BSBWOR202A Organise and complete daily work activities

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to organise and complete work activities, and to obtain feedback on work performance.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals developing basic skills and knowledge for working in a broad range of settings.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise work schedule	<p>1.1.Negotiate and agree upon work goals and plans with assistance from <i>appropriate persons</i></p> <p>1.2.Develop an understanding of the relationship between individual work goals and plans, and organisational goals and plans</p> <p>1.3.Plan and prioritise workload within allocated timeframes</p>
2. Complete work tasks	<p>2.1.Complete tasks within designated time lines and in accordance with <i>organisational requirements</i> and instructions</p> <p>2.2.Use effective questioning to seek assistance from <i>colleagues</i> when difficulties arise in achieving allocated tasks</p> <p>2.3.Identify <i>factors affecting work requirements</i> and take appropriate action</p> <p>2.4.Use <i>business technology</i> efficiently and effectively to complete work tasks</p> <p>2.5.Communicate progress of task to supervisor or colleagues as required</p>
3. Review work performance	<p>3.1.Seek <i>feedback</i> on work performance from supervisors or colleagues</p> <p>3.2.Monitor and adjust work according to <i>feedback</i> obtained through supervision and comparison with established team and organisational <i>standards</i></p> <p>3.3.Identify and plan <i>opportunities for improvement</i> in liaison with colleagues</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- literacy skills to use written and oral information about workplace requirements
- organising skills to arrange work priorities and arrangements
- problem-solving skills to solve routine problems
- technology skills to select and use technology appropriate for a task.

#### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- organisational policies, plans and procedures.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• organising and completing own work activities</li> <li>• seeking and acting on feedback from clients, colleagues and supervisors</li> <li>• using available business technology appropriate to the task, under direct instruction</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to office equipment and resources</li> <li>• examples of work plans, policies and procedures.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• analysis of responses to case studies and scenarios</li> <li>• demonstration of techniques</li> <li>• review of documentation planning and prioritising workload</li> <li>• evaluation of time line required to complete tasks</li> <li>• review of documentation planning opportunities for improvement.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• administration units.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Appropriate persons</i></b> may include:	<ul style="list-style-type: none"> <li>• colleagues</li> <li>• other staff members</li> <li>• supervisors, mentors or trainers</li> </ul>
<b><i>Organisational requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• access and equity principles and practice</li> <li>• anti-discrimination and related policy</li> <li>• business and performance plans</li> <li>• ethical standards</li> <li>• goals, objectives, plans, systems and processes</li> <li>• legal and organisation policies, guidelines and requirements</li> <li>• OHS policies, procedures and programs</li> <li>• quality and continuous improvement processes and standards</li> </ul>
<b><i>Colleagues</i></b> may include:	<ul style="list-style-type: none"> <li>• coach/mentor</li> <li>• other members of the organisation</li> <li>• peers/work colleagues/team</li> <li>• supervisor or manager</li> </ul>
<b><i>Factors affecting work requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• changes to procedures or new procedures</li> <li>• competing work demands</li> <li>• environmental factors such as time, weather</li> <li>• other work demands</li> <li>• resource issues</li> <li>• technology/equipment breakdowns</li> </ul>
<b><i>Business technology</i></b> may include:	<ul style="list-style-type: none"> <li>• computer applications</li> <li>• computers</li> <li>• electronic diaries</li> <li>• facsimile machines</li> <li>• photocopiers</li> <li>• printers</li> <li>• scanners</li> </ul>
<b><i>Feedback on performance</i></b> may include:	<ul style="list-style-type: none"> <li>• formal/informal performance appraisals</li> <li>• obtaining feedback from clients</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>obtaining feedback from supervisors and colleagues</li> <li>personal, reflective behaviour strategies</li> <li>routine organisational methods for monitoring service delivery</li> </ul>
<i>Standards</i> may include:	<ul style="list-style-type: none"> <li>Australian Standards</li> <li>legal and organisation policies, guidelines and requirements</li> <li>legislation</li> <li>organisational policies and procedures</li> <li>specified work standards</li> <li>standards set by work group</li> </ul>
<i>Opportunities for improvement</i> may include:	<ul style="list-style-type: none"> <li>coaching, mentoring and/or supervision</li> <li>internal/external training provision</li> <li>personal study</li> <li>recognition of current competence (RCC)/skills recognition/initial assessment</li> <li>workplace skills assessment</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Industry Capability - Workplace Effectiveness
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## Co-requisite units

<b>Co-requisite units</b>		



## BSBWOR204A Use business technology

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to select, use and maintain a range of business technology. This technology includes the effective use of computer software to organise information and data.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who use business technology to perform a range of routine tasks. They use a limited range of practical skills and fundamental knowledge of equipment use and the organisation of data or files in a defined context, under direct supervision or with limited individual responsibility.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select and use technology	<p>1.1. Select appropriate <b>technology</b> and <b>software applications</b> to achieve the requirements of the task</p> <p>1.2. Adjust workspace, furniture and equipment to suit user ergonomic requirements</p> <p>1.3. Use technology according to <b>organisational requirements</b> and in a way which promotes a safe work environment</p>
2. Process and organise data	<p>2.1. Identify, open, generate or amend files and records according to task and organisational requirements</p> <p>2.2. Operate <b>input devices</b> according to organisational requirements</p> <p>2.3. <b>Store data</b> appropriately and exit applications without damage to or loss of, data</p> <p>2.4. Use manuals, training booklets and/or online help or help-desks to overcome basic difficulties with applications</p>
3. Maintain technology	<p>3.1. Identify and replace used <b>technology consumables</b> in accordance with manufacturer's instructions and organisational requirements</p> <p>3.2. Carry out and/or arrange <b>routine maintenance</b> to ensure equipment is maintained in accordance with manufacturer's instructions and organisational requirements</p> <p>3.3. <b>Identify equipment faults</b> accurately and take action in accordance with manufacturer's instructions or report fault to designated person</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- literacy skills to identify work requirements; to understand and process basic, relevant workplace information; and to follow written instructions
- communication skills to request advice, to receive feedback and to work with a team
- problem-solving skills to solve routine technology problems.

#### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
- ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- organisational policies, plans and procedures, especially in regard to file-naming and storage conventions
- organisational IT procedures including back-up and virus protection procedures
- basic technical terminology in relation to reading help-files and manuals.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• selection and application of appropriate equipment and software applications in relation to assigned task/s</li> <li>• access, retrieval and storage of required data</li> <li>• performance of basic maintenance on a range of office equipment</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to office equipment and resources</li> <li>• examples of files and data for storage</li> <li>• manuals and training booklets for equipment.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• analysis of responses to case studies and scenarios</li> <li>• demonstration of techniques</li> <li>• oral or written questioning to assess knowledge of office equipment</li> <li>• evaluation of maintaining technology.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• IT use units</li> <li>• other industry capability units.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Technology</i></b> may include:	<ul style="list-style-type: none"> <li>• computer technology, such as laptops and personal computers</li> <li>• digital cameras</li> <li>• modems</li> <li>• printers</li> <li>• scanners</li> <li>• zip drives</li> <li>• photocopiers</li> <li>• shredders</li> <li>• binders</li> <li>• laminators</li> <li>• cutters</li> </ul>
<b><i>Software applications</i></b> may include:	<ul style="list-style-type: none"> <li>• email, internet</li> <li>• word processing, spreadsheet, database, accounting or presentation packages</li> </ul>
<b><i>Organisational requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• correctly identifying and opening files</li> <li>• legal and organisation policies, guidelines and requirements</li> <li>• locating data</li> <li>• log-on procedures</li> <li>• manufacturer's guidelines</li> <li>• OHS policies, procedures and programs</li> <li>• saving and closing files</li> <li>• storing data</li> </ul>
<b><i>Input devices</i></b> may include:	<ul style="list-style-type: none"> <li>• keyboard</li> <li>• mouse</li> <li>• numerical key pad</li> <li>• scanner</li> </ul>
<b><i>Storage of data</i></b> may include:	<ul style="list-style-type: none"> <li>• appropriate storage/filing of hard copies of computer generated documents</li> <li>• storage in directories and sub-directories</li> <li>• storage on CD-ROMs, hard and floppy disk drives or back-up systems</li> </ul>

<b>RANGE STATEMENT</b>	
<i>Technology consumables</i> may include:	<ul style="list-style-type: none"> <li>• back-up tapes</li> <li>• CD-ROM</li> <li>• floppy disks</li> <li>• print heads</li> <li>• printer ribbons and cartridges</li> <li>• toner cartridges</li> <li>• zip disks</li> </ul>
<i>Routine maintenance</i> may include:	<ul style="list-style-type: none"> <li>• in-house cleaning and servicing of equipment according to manufacturer's guidelines</li> <li>• periodic servicing by qualified or manufacturer approved, technician</li> <li>• regular checking of equipment</li> <li>• replacing consumables</li> </ul>
<i>Identifying equipment faults</i> may include:	<ul style="list-style-type: none"> <li>• checking repairs have been carried out</li> <li>• encouraging feedback from work colleagues</li> <li>• keeping a log book of detected faults</li> <li>• preparing a maintenance program</li> <li>• regular back-ups of data</li> <li>• regular OHS inspections</li> <li>• routine checking of equipment</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Industry Capability - Workplace Effectiveness
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## Co-requisite units

<b>Co-requisite units</b>	

<b>Co-requisite units</b>		

# BSBWOR301B Organise personal work priorities and development

## Modification History

Release	Comments
Release 1	<p>This version first released with <i>BSB07 Business Training Package version 6.0</i></p> <p>Revised unit. Performance criteria and required skills updated to focus on learning and development practices, KPIs and compliance with policy and procedures.</p> <p>Replaces BSBWOR301A Organise personal work priorities and development</p>

## Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to organise own work schedules, to monitor and obtain feedback on work performance, and to maintain required levels of competence. Operators may exercise discretion and judgement using appropriate theoretical knowledge of work scheduling and performance improvement to provide technical advice and support to a team.

## Application of the Unit

This unit applies to individuals who are skilled operators and apply a broad range of competencies in various work contexts.

## Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

## Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Organise and complete own work schedule	<p>1.1 Ensure that <b>work goals, objectives</b> or <b>KPIs</b> are understood, negotiated and agreed in accordance with <b>organisational requirements</b></p> <p>1.2 Assess and prioritise workload to ensure tasks are completed within identified timeframes</p> <p>1.3 Identify <b>factors affecting the achievement of work objectives</b> and incorporate contingencies into work plans</p> <p>1.4 Use <b>business technology</b> efficiently and effectively to manage and monitor scheduling and completion of tasks</p>
2. Monitor own work performance	<p>2.1 Accurately monitor and adjust personal work performance through self-assessment to ensure achievement of tasks and compliance with legislation and work processes or KPIs</p> <p>2.2 Ensure that <b>feedback on performance</b> is actively sought and evaluated from colleagues and clients in the context of individual and group requirements</p> <p>2.3 Routinely identify and report on variations in the quality of and <b>products and services</b> according to organisational requirements</p> <p>2.4 Identify <b>signs of stress</b> and effects on <b>personal wellbeing</b></p> <p>2.5 Identify <b>sources of stress</b> and access appropriate <b>supports and resolution strategies</b></p>
3. Coordinate personal skill development and learning	<p>3.1 Identify personal learning and professional development needs and skill gaps using self-assessment and advice from colleagues and clients in relation to role and organisational requirements</p> <p>3.2 Identify, prioritise and plan opportunities for undertaking personal skill development activities in liaison with work groups and relevant personnel</p> <p>3.3 Access, complete and record <b>professional development opportunities</b> to facilitate continuous learning and career development</p> <p>3.4 Incorporate formal and informal feedback into review of further learning needs</p>

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- communication skills to give and receive constructive feedback relating to development needs
- literacy skills to read and understand the organisation's procedures
- planning skills to organise work priorities according to work goals and objectives
- problem-solving skills to solve routine problems
- self-management skills to:
  - comply with policies and procedures
  - consistently evaluate and monitor own performance
  - seek learning opportunities.

### Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- organisational policies, plans and procedures
- methods to elicit, analyse and interpret feedback
- principles and techniques of goal setting, measuring performance, time management and personal assessment
- competency standards and how to interpret them in relation to self
- methods to identify and prioritise personal learning needs.

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• preparing work plans</li> <li>• scheduling and prioritising work objectives and tasks</li> <li>• knowledge of the principles and techniques of goal setting, measuring performance, time management and personal assessment.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to an actual workplace or simulated environment</li> <li>• access to office equipment and resources</li> <li>• examples of work schedules and performance improvement plans.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• review of self-assessment documentation outlining learning and development needs</li> <li>• analysis of responses to case studies and scenarios</li> <li>• demonstration of techniques</li> <li>• oral or written questioning to assess knowledge of methods to identify and prioritise personal learning needs</li> <li>• evaluation of planning for personal skill development activities and professional development opportunities.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b>Work goals and objectives</b> may include:	<ul style="list-style-type: none"> <li>• budgetary targets</li> <li>• production targets</li> <li>• reporting deadlines</li> <li>• sales targets</li> <li>• team and individual learning goals</li> <li>• team participation.</li> </ul>
<b>KPIs</b> may include:	<ul style="list-style-type: none"> <li>• key performance indicators on customer satisfaction</li> <li>• key performance indicators on customer effort</li> <li>• monitoring time taken to answer calls</li> <li>• operating within reporting protocols</li> <li>• score tools such as net promoter</li> <li>• understanding metrics.</li> </ul>
<b>Organisational requirements</b> may include:	<ul style="list-style-type: none"> <li>• access and equity principles and practice</li> <li>• business and performance plans</li> <li>• defined resource parameters</li> <li>• ethical standards</li> <li>• goals, objectives, plans, systems and processes</li> <li>• legal and organisational policies, guidelines and requirements</li> <li>• OHS policies, procedures and programs</li> <li>• quality and continuous improvement processes and standards</li> <li>• quality assurance and/or procedures manuals.</li> </ul>
<b>Factors affecting the achievement of work objectives</b> may include:	<ul style="list-style-type: none"> <li>• budget constraints</li> <li>• competing work demands</li> <li>• environmental factors such as time, weather</li> <li>• resource and materials availability</li> <li>• technology/equipment breakdowns</li> <li>• unforeseen incidents</li> <li>• workplace hazards, risks and controls.</li> </ul>
<b>Business technology</b> may include:	<ul style="list-style-type: none"> <li>• computer applications</li> <li>• computers</li> <li>• email</li> <li>• facsimile machines</li> </ul>

	<ul style="list-style-type: none"> <li>• internet/extranet/intranet</li> <li>• modems</li> <li>• personal schedulers</li> <li>• photocopiers</li> <li>• printers</li> <li>• scanners.</li> </ul>
<b><i>Feedback on performance</i></b> may include:	<ul style="list-style-type: none"> <li>• formal/informal performance appraisals</li> <li>• obtaining feedback from clients</li> <li>• obtaining feedback from supervisors and colleagues</li> <li>• personal, reflective behaviour strategies</li> <li>• routine organisational methods for monitoring service delivery.</li> </ul>
<b><i>Products and services</i></b> may include:	<ul style="list-style-type: none"> <li>• either products or services</li> <li>• goods</li> <li>• ideas</li> <li>• infrastructure</li> <li>• private or public sets of benefits.</li> </ul>
<b><i>Signs of stress</i></b> may include:	<ul style="list-style-type: none"> <li>• absence from work</li> <li>• alcohol or other substance abuse</li> <li>• conflict</li> <li>• poor work performance.</li> </ul>
<b><i>Personal wellbeing</i></b> may include:	<ul style="list-style-type: none"> <li>• cultural</li> <li>• emotional</li> <li>• social</li> <li>• spiritual.</li> </ul>
<b><i>Sources of stress</i></b> may include:	<ul style="list-style-type: none"> <li>• complex tasks</li> <li>• cultural issues</li> <li>• work and family conflict</li> <li>• workloads.</li> </ul>
<b><i>Supports and resolution strategies</i></b> may include:	<ul style="list-style-type: none"> <li>• awareness raising</li> <li>• counselling</li> <li>• employee assistance programs (EAP)</li> <li>• family support</li> <li>• group activities</li> <li>• job design</li> <li>• mediation</li> <li>• sharing load</li> <li>• time off</li> <li>• training.</li> </ul>
<b><i>Professional development opportunities</i></b> may include:	<ul style="list-style-type: none"> <li>• career planning/development</li> <li>• coaching, mentoring and/or supervision</li> </ul>

	<ul style="list-style-type: none"><li>• formal/informal learning programs</li><li>• internal/external training provision</li><li>• performance appraisals</li><li>• personal study</li><li>• quality assurance assessments and recommendations</li><li>• recognition of current competence/skills recognition</li><li>• work experience/exchange/opportunities</li><li>• workplace skills assessment.</li></ul>
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## Unit Sector(s)

Industry Capability – Workplace Effectiveness

## Custom Content Section

Not applicable.

## BSBWOR401A Establish effective workplace relationships

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to collect, analyse and communicate information and to use that information to develop and maintain effective working relationships and networks, with particular regard to communication and representation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>Frontline managers play an important role in developing and maintaining positive relationships in internal and external environments so that customers, suppliers and the organisation achieve planned outputs and outcomes. They play a prominent part in motivating, mentoring, coaching and developing team cohesion through providing leadership for the team and forming the bridge between the management of the organisation and team members.</p> <p>At this level, work will normally be carried out within routine and non routine methods and procedures, which require planning and evaluation, and leadership and guidance of others.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collect, analyse and communicate information and ideas	<p>1.1. Collect relevant <b>information</b> from appropriate sources and analyse and share with the work team to improve work performance</p> <p>1.2. Communicate ideas and information in a manner which is appropriate and sensitive to the cultural and social diversity of the audience and any specific needs</p> <p>1.3. Implement <b>consultation processes</b> to encourage employees to contribute to issues related to their work, and promptly relay feedback to the work team in regard to outcomes</p> <p>1.4. Seek and value contributions from internal and external sources in developing and refining new ideas and approaches</p> <p>1.5. Implement <b>processes</b> to ensure that issues raised are resolved promptly or referred to <b>relevant personnel</b> as required</p>
2. Develop trust and confidence	<p>2.1. Treat all internal and external contacts with integrity, respect and empathy</p> <p>2.2. Use the <b>organisation's social, ethical and business standards</b> to develop and maintain effective relationships</p> <p>2.3. Gain and maintain the trust and confidence of <b>colleagues, customers and suppliers</b> through competent performance</p> <p>2.4. Adjust interpersonal styles and methods to meet organisation's social and cultural environment</p> <p>2.5. Encourage other members of the work team to follow examples set, according to <b>organisation's policies and procedures</b></p>
3. Develop and maintain networks and relationships	<p>3.1. Use <b>networks</b> to identify and build relationships</p> <p>3.2. Use networks and other work relationships to provide identifiable benefits for the team and organisation</p>
4. Manage difficulties into positive outcomes	<p>4.1. Identify and analyse difficulties, and take action to rectify the situation within the requirements of the organisation and relevant legislation</p> <p>4.2. Guide and support colleagues to resolve work difficulties</p> <p>4.3. Regularly review and improve <b>workplace outcomes</b></p>

ELEMENT	PERFORMANCE CRITERIA
	<p>in consultation with relevant personnel</p> <p>4.4. Manage <i>poor work performance</i> within the organisation's processes</p> <p>4.5. Manage conflict constructively within the organisation's processes</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- coaching and mentoring skills to provide support to colleagues
- literacy skills to research, analyse, interpret and report information
- relationship management and communication skills to:
  - deal with people openly and fairly
  - forge effective relationships with internal and/or external people, and to develop and maintain these networks
  - gain the trust and confidence of colleagues
  - respond to unexpected demands from a range of people
  - use supportive and consultative processes effectively.

#### Required knowledge

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS), and environmental issues, equal opportunity, industrial relations and anti-discrimination
- theory associated with managing work relationships to achieve planned outcomes:
  - developing trust and confidence
  - maintaining consistent behaviour in work relationships
  - understanding the cultural and social environment
  - identifying and assessing interpersonal styles
  - establishing, building and maintaining networks
  - identifying and resolving problems
  - resolving conflict
  - managing poor work performance
  - monitoring, analysing and introducing ways to improve work relationships.

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- range of methods and techniques for communicating information and ideas to a range of stakeholders
- range of methods and techniques for developing positive work relationships that build trust and confidence in the team
- accessing and analysing information to achieve planned outcomes
- techniques for resolving problems and conflicts and dealing with poor performance
- knowledge of the theory associated with managing work relationships to achieve planned outcomes.

#### Context of and specific resources for assessment

Assessment must ensure:

- access to appropriate documentation and resources normally used in the workplace.

#### Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- demonstration of techniques in managing poor performance and communicating effectively
- direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate
- observation of performance in role plays
- observation of presentations
- oral or written questioning to assess knowledge of relevant legislation
- review of consultation processes implemented to encourage employees to contribute to issues related to their work
- review of documentation outlining reviewing of workplace outcomes.

#### Guidance information for

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

**EVIDENCE GUIDE****assessment**

for example:

- other units from the Certificate IV in Frontline Management.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Information</i></b> may include:	<ul style="list-style-type: none"> <li>• data appropriate to work roles and organisational policies that is shared and retrieved in writing or verbally, electronically or manually such as:               <ul style="list-style-type: none"> <li>• archived, filed and historical background data</li> <li>• individual and team performance data</li> <li>• marketing and customer related data</li> <li>• planning and organisational documents including the outcomes of continuous improvement and quality assurance</li> <li>• policies and procedures</li> </ul> </li> </ul>
<b><i>Consultation processes</i></b> may include:	<ul style="list-style-type: none"> <li>• feedback to the work team and relevant personnel in relation to outcomes of the consultation process</li> <li>• opportunities for all employees to contribute to ideas and information about organisational issues</li> </ul>
<b><i>Processes</i></b> to ensure that issues raised are resolved promptly or referred may include:	<ul style="list-style-type: none"> <li>• conducting informal meetings</li> <li>• coordinating surveys or questionnaires</li> <li>• distributing newsletters or reports</li> <li>• exchanging informal dialogue with relevant personnel</li> <li>• participating in planned organisational activities</li> </ul>
<b><i>Relevant personnel</i></b> may include:	<ul style="list-style-type: none"> <li>• managers</li> <li>• OHS committee and other people with specialist responsibilities</li> <li>• other employees</li> <li>• supervisors</li> <li>• union representatives/groups</li> </ul>
<b><i>Organisation's social, ethical and business standards</i></b> may refer to:	<ul style="list-style-type: none"> <li>• implied standards such as honesty and respect relative to the organisational culture and generally accepted within the wider</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>community</li> <li>rewards and recognition for high performing staff</li> <li>standards expressed in legislation and regulations such as anti-discrimination legislation</li> <li>written standards such as those expressed in: <ul style="list-style-type: none"> <li>code of workplace conduct/behaviour</li> <li>dress code</li> <li>policies</li> <li>statement of workplace values</li> <li>vision and mission statements</li> </ul> </li> </ul>
<i>Colleagues, customers and suppliers</i> may include:	<ul style="list-style-type: none"> <li>both internal and external contacts</li> <li>employees at the same level and more senior managers</li> <li>people from a wide variety of social, cultural and ethnic backgrounds</li> <li>team members</li> </ul>
<i>Organisation's policies and procedures</i> may refer to:	<ul style="list-style-type: none"> <li>Materials Safety Data Sheets</li> <li>organisational tasks and activities undertaken to meet performance outcomes</li> <li>sets of accepted actions approved by the organisation</li> <li>Standard Operating Procedures</li> </ul>
<i>Networks</i> may be:	<ul style="list-style-type: none"> <li>established structures or unstructured arrangements and may include business or professional associations</li> <li>informal or formal and with individuals or groups</li> <li>internal and/or external</li> </ul>
<i>Workplace outcomes</i> may include:	<ul style="list-style-type: none"> <li>OHS processes and procedures</li> <li>performance of the work team</li> </ul>
<i>Poor work performance</i> may refer to:	<ul style="list-style-type: none"> <li>individual team members</li> <li>organisation as a whole</li> <li>self</li> <li>whole work team</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Industry Capability - Workplace Effectiveness
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**Co-requisite units**

<b>Co-requisite units</b>		

## BSBWOR404B Develop work priorities

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to plan one's own work schedules, to monitor and to obtain feedback on work performance and development. It also addresses the requirement to take responsibility for one's own career planning and professional development.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to individuals who are required to design their own work schedules and work plans, and to establish priorities for their work. They will typically hold some responsibilities for the work of others and have some autonomy in relation to their own role.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and complete own work schedule	<p>1.1.Prepare <b>Workgroup</b> plans which reflect consideration of resources, client needs and workgroup targets</p> <p>1.2.Analyse and incorporate <b>Work objectives</b> and priorities into personal schedules and responsibilities</p> <p>1.3.Identify <b>Factors affecting the achievement of work objectives</b> and establish contingencies and incorporate them into work plans</p> <p>1.4.Efficiently and effectively use <b>Business technology</b> to manage and monitor planning completion and scheduling of tasks</p>
2. Monitor own work performance	<p>2.1.Identify and analysed personal performance through self-assessment and feedback from others on the achievement of work objectives</p> <p>2.2.Seek and evaluate <b>Feedback on performance</b> from colleagues and clients in the context of individual and group requirements</p> <p>2.3.Routinely identify and report on variations in the quality of service and performance in accordance with organisational requirements</p>
3. Coordinate professional development	<p>3.1.Assess personal knowledge and skills against organisational benchmarks to determine development needs and priorities</p> <p>3.2.Research and identify sources and plan for opportunities for improvement in consultation with colleagues</p> <p>3.3.Use <b>Feedback</b> to identify and develop ways to improve competence within available opportunities</p> <p>3.4.Identify, access and complete <b>professional development activities</b> to assist career development</p> <p>3.5.Store and maintain records and documents relating to achievements and assessments in accordance with organisational requirements</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- learning skills to recognise and develop new and necessary skills and knowledge
- literacy skills to understand the organisation's policies, procedures and communications, to write personal work plans and professional development plans, and to request and receive feedback about performance
- organising skills to prioritise, manage time and meet deadlines
- problem solving skills to develop contingency plans

#### Required knowledge

- knowledge of relevant business technology applications to schedule tasks and plan work
- knowledge of techniques to prepare personal plans and establish priorities
- methods to identify and prioritise personal learning needs
- understanding of a range of professional development options
- understanding of methods to elicit, analyse and interpret feedback
- understanding of methods to evaluate own performance

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• preparing and communicating own work plan</li> <li>• scheduling work objectives and tasks to support the achievement of goals</li> <li>• seeking and acting on feedback from clients and colleagues</li> <li>• reviewing own work performance against achievements through self-assessment</li> <li>• accessing learning opportunities to extend own personal work competencies</li> <li>• using business technology to monitor self development.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• the learner and trainer should have access to appropriate documentation and resources normally used in the workplace</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• observation of performance in role plays</li> <li>• observation of presentations</li> <li>• review of work and professional development plans.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• Other units from the Certificate IV in Frontline Management.</li> </ul>

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Workgroup plans</i></b> may include:	<ul style="list-style-type: none"> <li>• budgetary plans</li> <li>• production plans</li> <li>• reporting plans</li> <li>• sales plans</li> <li>• team and individual learning goals</li> <li>• team participation</li> <li>• work schedules</li> </ul>
<b><i>Work objectives</i></b> may include:	<ul style="list-style-type: none"> <li>• budgetary targets</li> <li>• production targets</li> <li>• reporting deadlines</li> <li>• sales targets</li> <li>• team and individual learning goals</li> <li>• team participation</li> </ul>
<b><i>Factors affecting the achievement of work objectives</i></b> may include:	<ul style="list-style-type: none"> <li>• budget constraints</li> <li>• competing work demands</li> <li>• environmental factors such as time, weather, etc</li> <li>• personnel</li> <li>• resource and materials availability</li> <li>• technology/equipment breakdowns</li> <li>• unforeseen incidents</li> </ul>
<b><i>Business technology</i></b> may include:	<ul style="list-style-type: none"> <li>• computer applications</li> <li>• computers</li> <li>• email and internet/intranet/extranet</li> <li>• facsimile machines</li> <li>• modems</li> <li>• personal schedules</li> <li>• photocopiers</li> <li>• printers</li> <li>• scanners</li> </ul>
<b><i>Feedback on performance</i></b> may include:	<ul style="list-style-type: none"> <li>• formal/informal performance appraisals</li> <li>• obtaining comments from clients</li> <li>• obtaining comments from supervisors and</li> </ul>

RANGE STATEMENT	
	colleagues <ul style="list-style-type: none"> <li>• personal, reflective behaviour strategies</li> <li>• routine organisational methods for monitoring service delivery</li> </ul>
<i>Professional development activities</i> may include:	<ul style="list-style-type: none"> <li>• career planning/development</li> <li>• coaching, mentoring and/or supervision</li> <li>• formal/informal learning programs</li> <li>• internal/external training provision</li> <li>• performance appraisals</li> <li>• personal study</li> <li>• Recognition of Prior Learning</li> <li>• work experience/exchange/opportunities</li> <li>• workplace skills assessment</li> </ul>

## Unit Sector(s)

Unit sector	
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ELEMENT	PERFORMANCE CRITERIA
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## Competency field

Competency field	Management and Leadership - Management
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## Co-requisite units

Co-requisite units		



## BSBWOR501B Manage personal work priorities and professional development

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to manage own performance and professional development. Particular emphasis is on setting and meeting priorities, analysing information and using a range of strategies to develop further competence.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to managers and focuses on the need for managers to be organised, focussed and skilled, in order to effectively manage the work of others. As such it is an important unit for most managers, particularly as managers serve as role models and have a significant influence on the work culture and patterns of behaviour.</p>
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>	

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish personal work goals	<p>1.1. Serve as a positive role model in the workplace through personal work planning and organisation</p> <p>1.2. Ensure personal work goals, plans and activities reflect the organisation's plans, and <b><i>own responsibilities and accountabilities</i></b></p> <p>1.3. Measure and maintain personal performance in varying work conditions, work contexts and contingencies</p>
2. Set and meet own work priorities	<p>2.1. Take initiative to prioritise and facilitate competing demands to achieve personal, team and organisational goals and objectives</p> <p>2.2. Use <b><i>technology</i></b> efficiently and effectively to manage work priorities and commitments</p> <p>2.3. Maintain appropriate work-life balance, and ensure stress is effectively managed and health is attended to</p>
3. Develop and maintain professional competence	<p>3.1. Assess personal knowledge and skills against <b><i>competency standards</i></b> to determine development needs, priorities and plans</p> <p>3.2. Seek feedback from employees, <b><i>clients and colleagues</i></b> and use this feedback to identify and develop ways to improve competence</p> <p>3.3. Identify, evaluate, select and use <b><i>development opportunities</i></b> suitable to personal learning style/s to develop competence</p> <p>3.4. Undertake participation in networks to enhance personal knowledge, skills and work relationships</p> <p>3.5. Identify and develop new skills to achieve and maintain a competitive edge</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to receive, analyse and report on feedback
- literacy skills to interpret written and verbal information about workplace requirements
- organisational skills to set and achieve priorities.

#### Required knowledge

- principles and techniques involved in the management and organisation of:
  - performance measurement
  - personal behaviour, self-awareness and personality traits identification
  - personal development plan
  - personal goal setting
  - time management
- management development opportunities and options for self
- organisation's policies, plans and procedures
- types of learning style/s and how they relate to the individual
- types of work methods and practices that can improve personal performance.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• systems and processes (electronic or paper-based) used to organise and prioritise tasks, which show how work is managed</li> <li>• personal development plan, with career objectives and an action plan</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to appropriate documentation and resources normally used in the workplace.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• analysis of responses to case studies and scenarios</li> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• observation of presentations</li> <li>• oral or written questioning to assess knowledge of work methods and practices that can improve personal performance</li> <li>• review of personal work goals, plans and activities</li> <li>• evaluation of work-life balance</li> <li>• review of documentation assessing personal knowledge and skills against competency standards.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• other units from the Diploma of Management.</li> </ul>

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b><i>Own responsibilities and accountabilities</i></b> may include:	<ul style="list-style-type: none"> <li>• expectations of workplace performance as expressed in a performance plan</li> <li>• outputs as expressed in position descriptions or duty statements</li> <li>• statement of conduct outlining an individual's responsibilities/actions/performance</li> </ul>
<b><i>Technology</i></b> may include:	<ul style="list-style-type: none"> <li>• computerised systems and software, databases, project management and word processing</li> <li>• electronic diary</li> <li>• personal digital assistant (PDA)</li> </ul>
<b><i>Competency standards</i></b> may include:	<ul style="list-style-type: none"> <li>• enterprise-specific units of competency consistent with work requirements</li> <li>• nationally endorsed units of competency consistent with work requirements</li> </ul>
<b><i>Clients and colleagues</i></b> may be:	<ul style="list-style-type: none"> <li>• colleagues at the same level and more senior managers</li> <li>• internal or external customers</li> <li>• people from a wide range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities</li> <li>• team members</li> </ul>
<b><i>Development opportunities</i></b> may include:	<ul style="list-style-type: none"> <li>• action learning</li> <li>• coaching</li> <li>• exchange/rotation</li> <li>• induction</li> <li>• mentoring</li> <li>• shadowing</li> <li>• structured training programs</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Management and Leadership - Management
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## Co-requisite units

<b>Co-requisite units</b>		

## BSBWOR502B Ensure team effectiveness

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to facilitate all aspects of teamwork within the organisation. It involves taking a leadership role in the development of team plans, leading and facilitating teamwork and actively engaging with the management of the organisation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to managers and addresses the need for managers to facilitate work teams and to build a positive culture within work teams. The unit takes a systematic and planned approach to developing teams. It includes the soft skills as well as more structured approaches to the management of teams.</p> <p>At this level, work will normally be carried out within complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish team performance plan	<p>1.1. <b>Consult</b> team members to establish a common understanding of team purpose, roles, responsibilities and <b>accountabilities</b> in accordance with organisational goals, plans and objectives</p> <p>1.2. Develop <b>performance plans</b> to establish expected <b>outcomes, outputs, key performance indicators</b> and goals for work team</p> <p>1.3. <b>Support</b> team members in meeting expected performance outcomes</p>
2. Develop and facilitate team cohesion	<p>2.1. Develop <b>strategies</b> to ensure team members have input into planning, decision making and operational aspects of work team</p> <p>2.2. Develop <b>policies and procedures</b> to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities</p> <p>2.3. Provide feedback to team members to encourage, value and reward individual and team efforts and contributions</p> <p>2.4. Develop <b>processes</b> to ensure that issues, concerns and problems identified by team members are recognised and addressed</p>
3. Facilitate teamwork	<p>3.1. Encourage team members and individuals to participate in and to take responsibility for team activities, including communication processes</p> <p>3.2. Support the team in identifying and resolving work performance problems</p> <p>3.3. Ensure own contribution to work team serves as a role model for others and enhances the organisation's image for all <b>stakeholders</b></p>
4. Liaise with stakeholders	<p>4.1. Establish and maintain open communication processes with all stakeholders</p> <p>4.2. Communicate information from <b>line manager/management</b> to the team</p> <p>4.3. Communicate unresolved issues, concerns and problems raised by team members and follow-up with line manager/management and other relevant stakeholders</p> <p>4.4. Evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to explain team goals, to address team conflict and to build an environment of trust
- planning and organisational skills to keep team on track and focussed on work outcomes.

#### Required knowledge

- group behaviour
- strategies for mentoring and coaching to informally guide and instruct team members
- issue resolution
- strategies for gaining consensus.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>• range of techniques that can be used to build work teams, strengthen communications in the team and resolve issues</li> <li>• methods for engaging with stakeholders and obtaining advice from outside the work team, to ensure team is focussed and on track</li> <li>• knowledge of group behaviour.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• access to appropriate documentation and resources normally used in the workplace.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• analysis of responses to case studies and scenarios</li> <li>• assessment of written reports</li> <li>• demonstration of team building techniques</li> <li>• direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate</li> <li>• observation of performance in role plays</li> <li>• review of performance plans developed for work team</li> <li>• review of policies and procedures developed to ensure team members take responsibility for own work.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• other units from the Diploma of Management.</li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Consultation</i></b> may refer to:	<ul style="list-style-type: none"> <li>conducting meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual performance plans</li> <li>mechanisms used to provide feedback to the work team in relation to outcomes of consultation</li> </ul>
<b><i>Accountabilities</i></b> may refer to:	<ul style="list-style-type: none"> <li>responsibilities as defined in position descriptions, codes of conduct/behaviour, duty statements or similar</li> <li>statement of conduct outlining responsibilities/actions/performance</li> </ul>
<b><i>Performance plans</i></b> may refer to:	<ul style="list-style-type: none"> <li>individual performance plans linked to team goals</li> <li>team plans based on work assignments and responsibilities</li> </ul>
<b><i>Outcomes, outputs, key performance indicators</i></b> may refer to agreed:	<ul style="list-style-type: none"> <li>changes in work roles and responsibilities</li> <li>improved individual and team, performance and participation</li> <li>improvements to systems, operations</li> <li>measures for monitoring and evaluating the efficiency or effectiveness of systems or services</li> <li>quality standards and expectations</li> <li>targets for productivity improvements such as reduced downtime, higher production levels, decreases in absenteeism</li> <li>targets for training and development</li> </ul>
<b><i>Support</i></b> may include:	<ul style="list-style-type: none"> <li>Coaching</li> <li>Mentoring</li> <li>Training and development opportunities</li> <li>Clarification of roles and expectations</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• Long term or short term plans</li> <li>• Meetings</li> </ul>
<i>Strategies</i> may refer to:	<ul style="list-style-type: none"> <li>• clarification of roles and expectations</li> <li>• electronic communication devices and processes, such as intranet and email communication systems, to facilitate input</li> <li>• long-term or short-term plans factoring in opportunities for team input</li> <li>• mentoring and 'buddy' systems to support team members in providing input</li> <li>• newsletters and briefings</li> <li>• training and development activities</li> </ul>
<i>Policies and procedures</i> may refer to:	<ul style="list-style-type: none"> <li>• organisational guidelines and systems that govern operational functions</li> <li>• procedures that detail the activities that must be carried out for the completion of actions and tasks</li> <li>• Standard Operating Procedures</li> </ul>
<i>Processes</i> may refer to:	<ul style="list-style-type: none"> <li>• brainstorming options with the team for addressing concerns</li> <li>• creating a matrix of issues and concerns and distributing for comment</li> <li>• discussions with individuals regarding their concerns</li> <li>• distributing drafts for comment with a range of options for resolution of concerns</li> <li>• training and development sessions</li> </ul>
<i>Stakeholders</i> may include:	<ul style="list-style-type: none"> <li>• Board members</li> <li>• business or government contacts</li> <li>• funding bodies</li> <li>• union/employee groups and representatives</li> <li>• work team</li> </ul>
<i>Line manager/management</i> may refer to:	<ul style="list-style-type: none"> <li>• chief executive officer</li> <li>• direct superior</li> <li>• other management representatives</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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## Competency field

<b>Competency field</b>	Industry Capability - Workplace Effectiveness
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## Co-requisite units

<b>Co-requisite units</b>		

## FNSASIC302C Develop, present and negotiate client solutions

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit describes the performance outcomes, skills and knowledge required to satisfy the training requirements for authorisation by an Australian ASIC registered License (AFSL) holder to provide advice on deposit products, non-cash payment facilities and general insurance products at Tier 2 level.</p> <p>This unit is applicable to individuals working within enterprises and job roles subject to licensing, legislative, regulatory or certification requirements including legislation administered by ASIC.</p>
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### Application of the Unit

<b>Application of the unit</b>	This unit applies to job roles involving provision of advice on financial products and services at ASIC Tier 2 level.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop appropriate strategies and solutions	<p>1.1. An appropriate strategy to provide for <b><i>identified needs and outcomes</i></b> is determined from analysis of products, client <b><i>risk profile</i></b> and assessment of their needs</p> <p>1.2. Relevant research, analysis and product modelling is conducted and an appropriate solution, plan, policy or transaction is drafted for presentation to the client demonstrating understanding of the ASIC identified generic and specialist knowledge relevant to the products being offered</p>
2. Present appropriate strategies and solutions to client	<p>2.1. The proposed transaction is explained and discussed with the client in a clear and unambiguous way demonstrating product knowledge appropriate for the service or product offered</p> <p>2.2. Relevant details, terms and conditions of product or service are reinforced to client with impacts and possible risks of the solution disclosed in a clear and concise manner</p> <p>2.3. Client is provided with written supporting <b><i>documentation</i></b> and guided through the key aspects of the documentation</p>
3. Negotiate financial plan, policy or transaction with client	<p>3.1. <b><i>Concerns or issues</i></b> the client has regarding the proposed plan, policy or transaction are discussed and clarified</p> <p>3.2. Confirmation is sought from client that they understand the proposed plan, policy or transaction</p>
4. Coordinate implementation of agreed plan, policy or transaction	<p>4.1. The client's formal agreement to the proposed plan, policy or transaction is gained</p> <p>4.2. Associated fee and cost structures and timeframes for execution and processing are clearly explained and confirmation of understanding gained from the client</p>
5. Complete and maintain necessary documentation	<p>5.1. Proposal and all other statutory and transactional documents are completed and signed off by the client</p> <p>5.2. Copies of appropriate documentation and the signed agreement are exchanged</p>
6. Provide ongoing service where requested by client	<p>6.1. Type and form of ongoing service including reporting on performance and review of plan, policy or transaction is agreed with the client</p>

ELEMENT	PERFORMANCE CRITERIA
	<p>6.2.Fees and costs for ongoing and specifically defined service are clearly explained and confirmation of understanding gained from the client</p> <p>6.3.Ongoing service is provided as required</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - determine and confirm client requirements, using questioning and active listening as required
  - present products and services to clients clearly and thoroughly
  - negotiate agreed outcomes with clients
  - use language and concepts appropriate to cultural differences
- numeracy and IT skills to:
  - identify and use financial product information
  - access and use appropriate software such as spreadsheets and databases
  - use internet information
- literacy skills for analysing information and products to ensure appropriateness to client needs, currency and accuracy
- analytical skills to determine client risk profiles and undertake a needs analysis
- interpersonal skills to establish rapport with clients and to liaise with other team members
- organisational and time management skills to sequence tasks, meet timelines and arrange meetings

#### Required knowledge

##### Generic knowledge requirements

- the economic environment and characteristics and impact of economic and business cycles including:
  - interest rates
  - exchange rates
  - inflation
  - government monetary and fiscal policies
- the operation of financial markets, the roles played by intermediaries and issuers, structure and inter-relationships within the financial markets, and inter-relationship between industry sectors
- financial products, including:
  - the concept of a financial product
  - general definition
  - specific inclusions and exclusions
  - types of financial investment products
  - types of financial risk products

## REQUIRED SKILLS AND KNOWLEDGE

- taxation issues in relation to the products and markets in which they operate
- advisory functions, including:
  - the role of the representative or adviser
  - participants in the advisory services market
  - range of services provided
  - profile and financial information of the client
  - appropriateness of a risk assessment
- the legal environment and disclosure and compliance including:
  - relevant legal principles (e.g. Corporations Act, Financial Services Reform Act (FSRA), Trade Practices Act)
  - the relationship between ethics and regulatory requirements (e.g. good faith, utmost good faith, full disclosure of remuneration/fees and any other conflicts of interest which may influence the adviser's recommendation)
- relevant industry codes of practice and conduct
- complaints resolution procedures (internal and external)
- ASIC regulatory guidelines

### Specialist knowledge requirements

- the specific industry or product in which they are operating. For general insurance products this includes:
  - types of general insurance products and policies
  - standard cover (and deviations)
  - policy wordings
  - taxes and charges
  - insurance claims
  - premium rating and risk selection
  - reporting
  - product development
  - underwriting
- for deposit products and non-cash payment facilities this includes:
  - types of products and facilities
  - product and facility characteristics

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• interpret and comply with industry regulations and codes of practice including, for insurance products, the required approval or authority to accept the transfer of risk</li> <li>• explain the characteristics, benefits and impacts of financial products and services to clients</li> <li>• present appropriate financial products and services to clients and negotiate a plan, policy or transaction successfully.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• competency is demonstrated in the context of the financial services work environment and conditions specified in the range statement either in a relevant workplace or a closely simulated work environment</li> <li>• access to and the use of a range of common office equipment, technology, software and consumables</li> <li>• access to financial services product information.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples, in combination, are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• evaluating an integrated activity which combines the elements of competency for the unit or a cluster of related units of competency</li> <li>• observing processes and procedures in workplaces or role plays</li> <li>• verbal or written questioning on underpinning knowledge and skills</li> <li>• setting and reviewing workplace projects and business simulations or scenarios</li> <li>• accessing and validating third party reports.</li> </ul>
<b>Guidance information for assessment</b>	

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Identified needs and outcomes*** may include:

- business needs
- debt position
- expectations of access to product
- expectations of income from this product
- expectations of lifecycle and length of product
- family income
- security.

***Risk profile*** might include:

- access restrictions on product
- borrowing risk and gearing
- economic
- market and sector risks:
  - economic cycle
  - fixed interest
  - property
  - stock market
- risk factors and return expectations
- specific product risk
- volatility of income and capital.

***Documentation*** might include:

- disclaimers
- disclosures
- product application forms
- written advice.

Client ***concerns and issues*** might include:

- personal involvement:
  - active
  - passive
- risk profile:
  - conservative
  - speculator
  - moderate
- their beliefs about performance
- expectations of fluctuations in income or capital

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• being a long-term or short-term investor</li> <li>• need for security.</li> </ul>
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**Unit Sector(s)**

<b>Unit sector</b>	ASIC units
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**Competency field**

<b>Competency field</b>	
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**Co-requisite units**

<b>Co-requisite units</b>	FNSASIC301C	Establish client relationship and analyse needs

# ICAWEB201A Use social media tools for collaboration and engagement

## Modification History

Version	Comments
ICAWEB201A	This version first released with <i>ICA11 Information and Communications Technology Training Package version 1.0</i>

## Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to establish a social networking presence using social media tools and applications.

The unit specifically identifies the requirement to review, compare and use different types of social networking tools and applications.

## Application of the Unit

This unit applies to information and communications technology (ICT) personnel who need to develop a social networking web presence for a small or large office environment using social media tools and applications.

## Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

## Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

## Elements and Performance Criteria

1. Describe different types of social media tools and applications	1.1 Explain characteristics of the term <b><i>social media</i></b> 1.2 Identify different types of <b><i>social-media tools and applications</i></b> 1.3 Illustrate some of the <b><i>issues</i></b> associated with the use of social media tools and applications
2. Compare different types of social media tools and applications	2.1 Select one social media type for review 2.2 Review most popular tools and applications within that social media type 2.3 Itemise benefits across a range of the most popular tools and applications 2.4 Select most appropriate social media tool or application
3. Set up and use popular social media tools and applications	3.1 Identify social media tools and applications for possible implementation 3.2 Initiate preferred social media tools and applications for use 3.3 Establish social media interface using <b><i>text and file content</i></b> 3.4 Initiate <b><i>social networking</i></b> interaction 3.5 Test and evaluate tools and applications for <b><i>ease of use</i></b> 3.6 Present findings

## Required Skills and Knowledge

*This section describes the skills and knowledge required for this unit.*

### Required skills

- communication skills to:
  - communicate with peers and supervisors
  - seek assistance and expert advice
- literacy skills to:
  - interpret user online manuals and help functions
  - read and write basic documents and instructions
- problem-solving skills to address problems when using applications
- technical skills to:
  - access the internet
  - operate a personal computer (PC) and printer
  - to enter text and numerical data
  - use social media application packages.

### Required knowledge

- basic technical terminology in relation to social networking and social media applications and tools
- basic knowledge of uploading images, text files, PDF files, audio files, video files and link associated files
- features and functions of social media applications
- import and export software functions
- linking documents
- OHS principles and responsibilities for ergonomics, including work periods and breaks
- tagging to facilitate collaborative folksonomy
- social media applications and procedures for connecting to social networking sites
- use of input and output devices
- use of RSS feeds to connect a social network.

## Evidence Guide

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• identify different types of social media tools and applications, and issues associated with their use</li> <li>• access the internet, set up a social networking presence and upload and link a wide variety of files</li> <li>• use OHS principles and responsibilities for ergonomics, such as work periods and breaks.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> <li>• PC and printer</li> <li>• internet</li> <li>• social-media tools and applications</li> <li>• online instructional documents</li> <li>• appropriate learning and assessment support when required.</li> </ul> <p>Where applicable, physical resources should include equipment modified for people with special needs.</p>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• verbal or written questioning to assess candidate's knowledge of types of social media tools and applications, and social-networking sites</li> <li>• direct observation of candidate accessing and interacting with a variety of social-networking sites</li> <li>• review of social-media tools and application evaluations.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate.</p> <p>Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed.</p> <p>Indigenous people and other people from a non-English speaking background may need additional support.</p>

	In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.
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## Range Statement

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.*

<b><i>Social media</i></b> may include:	<ul style="list-style-type: none"> <li>web applications that facilitate:             <ul style="list-style-type: none"> <li>information sharing</li> <li>interoperability</li> <li>user-centred design.</li> </ul> </li> </ul>
<b><i>Social-media tools and applications</i></b> may include:	<ul style="list-style-type: none"> <li>blogs</li> <li>folksonomies</li> <li>hosted services</li> <li>mashups</li> <li>social networking sites:             <ul style="list-style-type: none"> <li>YouTube</li> <li>Flickr</li> <li>Facebook</li> <li>Twitter</li> </ul> </li> <li>video sharing sites</li> <li>web applications</li> <li>wikis.</li> </ul>
<b><i>Issues</i></b> may include:	<ul style="list-style-type: none"> <li>copyright</li> <li>privacy</li> <li>security</li> <li>trust.</li> </ul>
<b><i>Text and file content</i></b> may include:	<ul style="list-style-type: none"> <li>applications, including:             <ul style="list-style-type: none"> <li>.exe</li> <li>.pdf</li> <li>.ppt</li> <li>.rtf</li> <li>.zip</li> </ul> </li> <li>audio, including:             <ul style="list-style-type: none"> <li>.mid</li> <li>.mp3</li> <li>.wav</li> </ul> </li> <li>graphics, including:             <ul style="list-style-type: none"> <li>.bmp</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• .gif</li> <li>• .jpg</li> <li>• .swf</li> <li>• .tif</li> <li>• text, including: <ul style="list-style-type: none"> <li>• .htm</li> <li>• .txt</li> </ul> </li> <li>• video, including: <ul style="list-style-type: none"> <li>• .avi</li> <li>• .mov</li> <li>• .mpg</li> </ul> </li> <li>• web, including: <ul style="list-style-type: none"> <li>• .asp</li> <li>• .xml.</li> </ul> </li> </ul>
<i><b>Social networking</b></i> is being connected by one or more specific types of interdependency, such as:	<ul style="list-style-type: none"> <li>• common interest</li> <li>• financial exchange</li> <li>• knowledge</li> <li>• personal relationships</li> <li>• prestige</li> <li>• relationships of beliefs.</li> </ul>
<i><b>Ease of use</b></i> may include:	<ul style="list-style-type: none"> <li>• affordability</li> <li>• desirable features for an online presence: <ul style="list-style-type: none"> <li>• bulletin boards</li> <li>• direct mailing to customers</li> <li>• online forums</li> <li>• selling of products online</li> </ul> </li> <li>• ease of communications</li> <li>• flexibility for placement of text, links and images</li> <li>• reasons for an external online presence: <ul style="list-style-type: none"> <li>• communication with potential customers</li> <li>• promotion of products and services</li> <li>• recruitment of volunteers and new staff</li> </ul> </li> <li>• reasons for an internal online presence: <ul style="list-style-type: none"> <li>• regular staff communications</li> <li>• enterprise cohesion</li> <li>• display of staff achievements</li> </ul> </li> <li>• reliability</li> <li>• set-up ease.</li> </ul>

## **Unit Sector(s)**

Web

## MEM05004C Perform routine oxy acetylene welding

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers preparing materials and performing routine oxy acetylene welding.
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies in a maintenance or manufacturing environment where the welding is not required to meet an Australian standard or equivalent. Fillet and butt welds would typically be performed on low carbon/mild steels.</p> <p>Where welding is required to meet Australian Standard 1554 General Purpose or equivalent codes, OHS regulations and/or licensing requirements, Unit MEM05022C (Perform advanced welding using oxy acetylene process) should be selected.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 2</b></p>
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### Licensing/Regulatory Information

Refer to Application of the Unit

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify weld requirements	1.1.Weld requirements are identified from job instructions. 1.2.Location of welds is identified in accordance with standard operating procedures and job specifications.
2. Prepare materials for welding	2.1.Materials are cleaned and prepared ready for welding.
3. Prepare equipment for welding	3.1.Welding equipment is set up correctly. 3.2.Settings and consumables are selected.
4. Perform routine welding using <i>oxy acetylene</i>	4.1.Safe welding practices are applied. 4.2.Materials are welded to job requirements. 4.3.Welds are cleaned in accordance with standard operating procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

- preparing materials
- setting up welding equipment
- welding with oxy acetylene fuel gas
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures
- following oral instructions
- using measurement skills for joint preparation and routine oxy acetylene welding

#### Required knowledge

Look for evidence that confirms knowledge of:

- preparatory requirements
- materials and consumables properties and characteristics
- equipment and equipment settings
- fuel gas properties and applications

**REQUIRED SKILLS AND KNOWLEDGE**

- post welding treatments
- weld characteristics
- any applicable industry standards, NOHSC guides, State/Territory regulatory codes of practice/standards
- safe work practices and procedures
- safe welding practices
- use and application of personal protective equipment for routine oxy acetylene welding

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to prepare materials and carry out routine oxy acetylene welding.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing routine oxy acetylene welding or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

#### Guidance information for

**EVIDENCE GUIDE**

assessment

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Materials</b>	Mild and low carbon steel and cast iron
<b>Prepared</b>	Preheating, setting up jigs, fixtures, clamps, joint preparation
<b>Equipment</b>	Hoses, blowpipes, regulators
<b>Consumables</b>	Filler rods, fluxes
<b>Oxy acetylene</b>	The term 'oxy-acetylene' is used here to describe a range of fuel gases, including acetylene, LPG, hydrogen etc.
<b>Cleaned</b>	Fluxes

**Unit Sector(s)**

Unit sector

**Co-requisite units**

Co-requisite units

<b>Co-requisite units</b>		

## Competency field

<b>Competency field</b>	Fabrication
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## MEM05006C Perform brazing and or silver soldering

### Modification History

Corrections to descriptor and range to clarify inclusion of 'brazing welding'.

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers performing brazing (including brazing welding) and silver soldering. It includes the preparation of materials and equipment and the inspection of the completed work.
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to silver soldering and brazing using all grades of silver solder and braze. It also includes soldering of copper and refrigeration work. Work includes the preparation of materials and equipment and the inspection of the completed work.</p> <p>Work is undertaken in a production or maintenance environment using predetermined standards of quality, safety and work procedures.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 2</b></p>
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### Licensing/Regulatory Information

Not Applicable

### Pre-Requisites

<b>Prerequisite units</b>		

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare materials and equipment	1.1.Job requirements are determined from specifications and/ or instructions. 1.2.Materials are correctly prepared using appropriate tools and techniques. 1.3.Materials are correctly assembled/aligned to meet specifications as required. 1.4.Distortion prevention measures are identified and appropriate action is taken as required. 1.5.Heating equipment is assembled and set up safely and correctly in accordance with standard operating procedures. 1.6.Correct and appropriate consumables are selected and prepared. 1.7.Test run is undertaken and verified as required.
2. Braze and/or silver solder	2.1.The correct process is selected to meet specifications. 2.2.Materials are preheated as required. 2.3.Consumables are applied using correct techniques. 2.4.Jointing material is applied correctly and in appropriate quantities to meet job/specifications. 2.5.Material temperature is annealed using correct and appropriate techniques.
3. Inspect joints	3.1.Excess jointing materials are removed using correct and appropriate techniques. 3.2.Inspection of joints is undertaken to standard operating procedures. 3.3.Inspection results are reported/recorded using standard operating procedures as required.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

**REQUIRED SKILLS AND KNOWLEDGE**

- preparing materials
- performing brazing, braze welding, silver soldering
- undertaking visual inspection
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures
- following oral instructions

**Required knowledge**

Look for evidence that confirms knowledge of:

- the reasons for selecting specific methods of assembly/alignment
- the procedures for minimising distortion of the materials being brazed/braze welded/silver soldered
- the procedures for assembling and setting up the specific heating equipment
- the reasons for selecting specific heating equipment
- the reasons for selecting specific consumables
- conducting test runs
- typical applications of brazing/braze welding and silver soldering processes
- the procedures and precautions for preheating the materials to be joined
- the effects of the use of inappropriate techniques on the performance of the jointed materials
- the effect of inappropriate quantities of jointing material on the performance of the jointed materials
- the procedures for normalising the temperature of jointed materials
- the consequences of using inappropriate techniques to normalise the temperature of the joint
- the procedures for removing excess jointing material
- the procedures for inspecting brazed/braze welded/silver soldered joints
- use and application of personal protective equipment for silver soldering and brazing/braze welding
- safe work practices and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to perform brazing (including braze welding) and silver soldering.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, i.e. the candidate is not in productive work, then appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with brazing (including braze welding) and/or silver soldering or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

#### Guidance information for

**EVIDENCE GUIDE**

<b>assessment</b>	
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**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Materials</b>	Ferrous and non-ferrous
<b>Heating</b>	Oxy acetylene and fuel gas, cylinders, connections, hoses, tips and nozzles
<b>Consumables</b>	Fluxes (resin or powder), all types of silver solder and brazing grades, etc.
<b>Process</b>	Brazing, braze welding and silver soldering

**Unit Sector(s)**

<b>Unit sector</b>	
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**Co-requisite units**

<b>Co-requisite units</b>	

## Competency field

Competency field	Fabrication
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## MEM05007C Perform manual heating and thermal cutting

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers performing manual heating, thermal cutting and gouging including the assembly and disassembly and operation of the equipment on a range of materials (ferrous, non-ferrous and non-metallic) using a variety of methods.
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to manual, straight line cutting standards. Manual or automatic processes are used to cut and heat to specifications. Cutting may include flame gouging by hand. All work is carried out to legislative and regulatory requirements. Predetermined standards of quality and safety are observed and work is carried out following standard operating procedures.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 2</b></p>
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### Licensing/Regulatory Information

Not Applicable

### Pre-Requisites

<b>Prerequisite units</b>		

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assemble/disassemble plant and equipment	1.1. Accessories and equipment are correctly selected and assembled for manual heating and thermal cutting.
2. Operate heating and thermal cutting equipment	2.1. Cutting process and/or procedure appropriate for material is selected. 2.2. All safety procedures are observed. 2.3. Equipment start-up procedures are followed correctly to standard operating procedures. 2.4. Equipment adjustments are made correctly using standard operating procedures. 2.5. Appropriate cutting allowances are made. 2.6. Material is used in the most economical way. 2.7. Defects are identified and corrective action is taken to standard operating procedures. 2.8. Material is heated and cut to specification. 2.9. Shape/size/length is to accepted workplace standards.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

- performing pre-start checks
- safely starting equipment
- following standard operating procedures
- adjusting equipment to operating specifications
- making cutting allowances
- economising material and minimising wastage
- identifying cutting defects and taking corrective action
- heating and cutting materials to specifications
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures. May include drawings

**REQUIRED SKILLS AND KNOWLEDGE**

- following oral instructions
- performing measurements needed to meet the requirements of this unit
- entering routine and familiar information onto proformas and standard workplace forms

**Required knowledge**

Look for evidence that confirms knowledge of:

- cutting processes appropriate to various materials
- heating and cutting specifications
- procedures for heating and cutting
- the tools, equipment and techniques for heating and cutting
- assembling procedures for equipment and accessories
- hazards and control measures associated with manual heating and thermal cutting
- use and application of personal protective clothing and equipment
- equipment pre-checks and operation
- procedures for adjusting heating and cutting equipment
- cutting allowances and reasons for applying them
- procedures for minimising waste material
- reasons for minimising waste material
- cutting defects and their causes
- procedures for correcting cutting defects
- tools, equipment and techniques required to correct cutting defects
- use and application of personal protective equipment
- safe work practices and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to perform manual heating and thermal cutting.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with manual heating/thermal cutting or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questions should not require language, literacy and numeracy skills beyond those required in this unit. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

#### Guidance information for assessment

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Cutting</b>	Use of hand held and self-propelled straight line cutters
<b>Process</b>	Fuel gas, oxy fuel gas and air fuel gas
<b>Material</b>	Various thicknesses and types including ferrous, non-ferrous and non-metallic materials

## Unit Sector(s)

<b>Unit sector</b>	
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## Co-requisite units

<b>Co-requisite units</b>		

## Competency field

Competency field	Fabrication
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## **MEM07005C Perform general machining**

### **Modification History**

Not Applicable

## Unit Descriptor

<b>Unit descriptor</b>	This unit of competency covers determining the job requirements and sequence of operations, selecting and mounting tools, performing the machining, measuring the components, and adjusting and maintaining a range of standard machine tools.
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit of competency applies to the use of machinery to shape metal including lathes, mills, planers, shapers, radial arm drills, slotters and surface grinders.</p> <p>This unit has been developed to support Engineering Tradesperson - Mechanical apprenticeship training and the recognition of trade level skills in machining operations. Skills covered by this unit are generally applied in occupational and work situations associated with fitting and machining. It may also apply to other trade occupations requiring general machining skills. It may also apply in some circumstances to senior operators who have responsibility for machine set up, selection of materials and lubricants, establishment of datum points and basic marking out, and setting of speeds, feeds and other machining parameters.</p> <p>This unit has application in the MEM30205 Certificate III in Engineering - Mechanical qualification and other qualifications requiring a basic trade level of machining skills. It may also apply to MEM20205 Certificate II in Engineering - Production Technology and MEM30105 Certificate III in Engineering - Production Systems and other qualifications requiring machining skills.</p> <p>Machining is undertaken on one or more of a range of standard machine tools. Machines are not computer numerical controlled (CNC) machines.</p> <p>Where machining is undertaken without undertaking any set up including mounting of tools, setting of speeds, feeds and other operational parameters then either MEM07024B Operate and monitor machine/process or MEM07025B Perform advanced machine/process operation should be selected.</p> <p>Drilling operations in this unit exclude those covered by</p>
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	<p>MEM18002B Use power tools/hand held operations.</p> <p>Where substantial marking out is required, MEM12006C Mark off/out (general engineering) should be considered.</p> <p>Where precision measurement is required, MEM12003B Perform precision mechanical measurement should also be considered.</p> <p>For set-up and operation of electro-discharge (EDM) machines, refer to MEM07014B Perform electro-discharge (EDM) machining operations.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 8</b></p>
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine job requirements	1.1. Drawings, instructions and specifications are interpreted and understood
2. Determine sequence of operations	2.1. Sequence of operations including job set-up is determined for maximum efficiency and to meet job specifications 2.2. Appropriate material is selected and datum established as required
3. Select and mount tools	3.1. Appropriate tools for job are selected, sharpened and shaped as required 3.2. Tools are mounted and positioned correctly
4. Perform machining operations	4.1. Basic marking out techniques are used where required 4.2. Machining parameters are set for job requirements and maximum tool life 4.3. Work is held or correctly clamped without damage to product, and all safety requirements are met 4.4. Machining is performed in a safe manner utilising all guards, safety procedures and personal protective clothing and equipment
5. Measure components	5.1. Components are checked with instruments or gauges appropriate to the measurement requirements to ensure compliance with specifications
6. Adjust and maintain machine	6.1. Routine maintenance and adjustments are carried out as required which may include slide and collar adjustment, cleaning and lubrication

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- reading and interpreting routine information on written job instructions, specifications and standard operating procedures which may include drawings

**REQUIRED SKILLS AND KNOWLEDGE**

- following oral instruction
- planning and sequencing operations
- preparing operational work plan
- sharpening and shaping cutting tools
- identifying worn or damaged cutting tools
- correct mounting and positioning of cutting tools
- basic marking out of materials
- setting machining parameters to achieve the job requirements and maximise tool life
- using appropriate and sufficient clamping/mounting of the work piece
- using coolant/lubricant correctly
- checking for conformance to specifications
- measuring to specified tolerances and dimensions

**Required knowledge**

Required knowledge includes:

- reasons for selecting the chosen sequence of operations
- methods of work holding
- basic marking out techniques including datum points/lines
- geometry of cutting tools for a range of materials and applications
- benefits of using correctly sharpened cutting tools
- machine operation
- selection of feeds and speeds to suit a range of materials and operations within the scope of this unit
- correct methods of mounting a variety of cutting tools
- safety issues with regard to correct clamping, guards and shields
- tolerances and limits of size
- situations indicating the need for machine adjustment, lubrication and cleaning
- techniques, tools and equipment to measure materials and machined components
- use and application of personal protective equipment
- safe work practices and procedures
- hazards and control measures associated with general machining

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to perform general machining including responsibility for selecting and mounting tooling and setting machining parameters. Competency in this unit cannot be claimed until all prerequisites have been satisfied

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include:

- correct job planning including identifying job requirements from drawings, instructions or specifications and sequence of operations
- identifying any required tooling, measuring equipment and accessories
- selecting and mounting required tooling
- selecting material and marking out if required
- setting machining parameters
- checking machined components for conformance to specifications.

#### Context of and specific resources for assessment

This unit has been developed to support training in and recognition of trade level competency in general machining as applied to a trade level fitting and machining, other trade or senior operator work environment. Assessment should emphasise a workplace context and procedures found in the candidate's workplace.

The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

#### Method of assessment

Typically Engineering Tradespersons - Mechanical and other persons engaged in general machining work are required to apply their machining skills and techniques across a range of jobs and specifications.

**EVIDENCE GUIDE**

	<p>A single assessment event is not appropriate. On the job assessment should be included as part of the assessment process wherever possible. Where assessment occurs off the job, judgement must consider evidence of the candidate's performance in a productive work environment that includes a sufficient range of appropriate tasks and materials to cover the scope of application for this unit.</p> <p>Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.</p> <p>The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.</p>
<b>Guidance information for assessment</b>	<p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing general machining or other units requiring the exercise of the skills and knowledge covered by this unit.</p> <p>Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.</p>

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

**RANGE STATEMENT**

regional contexts) may also be included.

<b>Operations</b>	<p>Operations may include:</p> <ul style="list-style-type: none"> <li>• parallel cutting</li> <li>• slotting</li> <li>• planing</li> <li>• drilling</li> <li>• knurling</li> <li>• cutting flats</li> <li>• non-precision surface grinding operations</li> </ul>
<b>Materials</b>	Materials may include ferrous and non-ferrous
<b>Tools</b>	<p>Tools may include:</p> <ul style="list-style-type: none"> <li>• cutting tools and accessories</li> <li>• measuring devices</li> </ul>
<b>Marking out techniques</b>	Marking out techniques may include basic marking out techniques using calipers, steel rules, dividers and scribes
<b>Machining parameters</b>	<p>Machining parameters may include:</p> <ul style="list-style-type: none"> <li>• speeds</li> <li>• feeds</li> <li>• stops</li> <li>• coolant and cutting lubricants</li> </ul>
<b>Machines</b>	<p>Machines may include:</p> <ul style="list-style-type: none"> <li>• lathes</li> <li>• mills</li> <li>• planers</li> <li>• shapers</li> <li>• radial arm drills</li> <li>• slotters</li> <li>• surface grinder</li> </ul>
<b>Maintenance and adjustments</b>	<p>Maintenance and adjustments may include:</p> <ul style="list-style-type: none"> <li>• slide and collar adjustment</li> <li>• cleaning and lubrication</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	
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**Co-requisite units**

<b>Co-requisite units</b>		

**Competency field**

<b>Competency field</b>	Machine and process operations
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## MEM09002B Interpret technical drawing

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers interpreting technical drawing applying to any of the full range of engineering disciplines.
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### Application of the Unit

<b>Application of the unit</b>	<p>Technical drawings may utilise perspective, exploded views or hidden view techniques. Drawings are provided to Australian Standard 1100 and/or Australian Standard 1102 and their equivalents from the full range of engineering disciplines.</p> <p>Standard symbols to Australian Standard 1100 and/or Australian Standard 1102 or equivalent are recognised in field of employment. Technical drawings may include symbol glossaries.</p> <p>Where any drawing, sketch, chart, diagram is only used as the technique for communication, then this unit does not apply: see Unit MEM12023A (perform engineering measurements) or Unit MEM16006A (Organise and communicate information).</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 4</b></p>
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### Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

Prerequisite units		

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select correct technical drawing	1.1.Drawing is checked and validated against job requirements or equipment. 1.2.Drawing version is checked and validated.
2. Interpret technical drawing	2.1.Components, assemblies or objects are recognised as required. 2.2.Dimensions are identified as appropriate to field of employment. 2.3.Instructions are identified and followed as required. 2.4.Material requirements are identified as required. 2.5.Symbols are recognised in the drawing as appropriate.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

- checking the drawing against job requirements/related equipment in accordance with standard operating procedures
- confirming the drawing version as being current in accordance with standard operating procedures
- where appropriate, obtaining the current version of the drawing in accordance with standard operating procedures
- reading, interpreting information on the drawing, written job instructions, specifications, standard operating procedures, charts, lists and other applicable reference documents
- checking and clarifying task related information
- undertaking numerical operations, geometry and calculations/formulae within the scope of this unit

#### Required knowledge

Look for evidence that confirms knowledge of:

- application of AS1100.101 in accordance with standard operating procedures
- relationship between the views contained in the drawing

**REQUIRED SKILLS AND KNOWLEDGE**

- objects represented in the drawing
- units of measurement used in the preparation of the drawing
- dimensions of the key features of the objects depicted in the drawing
- understanding of the instructions contained in the drawing
- the actions to be undertaken in response to those instructions
- the materials from which the object(s) are made
- any symbols used in the drawing as described in range statement
- hazard and control measures associated with interpreting technical drawings, including housekeeping
- safe work practices and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to interpret technical drawings as described.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with interpreting technical drawings or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning should not require language, literacy and numeracy skills beyond those required in this unit. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

#### Guidance information for assessment

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Interpret technical drawing

AS1100.101 is an extensive work and the candidate is not required to have complete familiarity with all its contents, the application of AS1100 would usually be in line with standard operating procedures; interpretation may require guidance particularly in respect to any geometric tolerancing

## Unit Sector(s)

### Unit sector

## Co-requisite units

Co-requisite units		

## Competency field

Competency field	Drawing, drafting and design
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## **MEM12023A Perform engineering measurements**

### **Modification History**

Not Applicable

## Unit Descriptor

<b>Unit descriptor</b>	This unit covers performing measurement skills requiring straightforward use of mechanical measuring devices and associated calculations.
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit covers straightforward measurement using devices which incorporate visual indications representing units of measurement.</p> <p>It applies to the use of measuring devices in a range of manufacturing, engineering and related environments. It includes, where required, adjustment of measuring devices through simple means and typically includes zeroing or scale adjustment.</p> <p>Measurements may be expressed in metric or imperial units. All measurements are undertaken to standard operating procedures. Electrical/electronic devices used are those not requiring the connection or disconnection of circuitry.</p> <p>Work is undertaken autonomously or part of team environment, in the field, work station or workshops.</p> <p>For straightforward use of comparison or pre-set measuring devices, Unit MEM12001B (Use comparison and basic measuring devices) should be accessed.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 5</b></p>
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select appropriate device or equipment	1.1.Measurement requirements are determined from specifications. 1.2.Appropriate device or equipment is selected according to standard operating procedures, to achieve required outcome.
2. Obtain measurements using a range of measuring devices	2.1.Correct and appropriate measuring technique is used. 2.2.Measurements are accurately obtained . 2.3.Dimensions are determined or verified using basic calculations, where required.
3. Maintain measuring devices	3.1.Routine care and storage of devices is undertaken to manufacturers' specifications or standard operating procedures. 3.2.Routine adjustments to devices are made and checked.
4. Communicate measurements as required	4.1.Measurements are accurately recorded, where required. 4.2.Freehand sketch which depicts required information is prepared, as required.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

- selecting the appropriate measuring device for given measuring tasks
- using appropriate measuring technique
- reading all measurements taken accurately to the finest graduation of the selected measuring device
- handling and storing measuring devices in accordance with manufacturers' specifications or standard operating procedures
- verifying all measuring devices before use
- making, where appropriate, routine adjustments to measuring devices
- reading, interpreting and following information on written job instructions,

**REQUIRED SKILLS AND KNOWLEDGE**

specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents

- planning and sequencing operations
- checking and clarifying task related information
- checking for conformance to specifications
- undertaking numerical operations involving addition, subtraction, multiplication, division, fractions and decimals within the scope of this unit
- preparing drawings as required

**Required knowledge**

Look for evidence that confirms knowledge of:

- correct application of a range of measuring devices
- correct and appropriate measuring technique for a range of measuring devices
- addition, subtraction, multiplication, division, fractions, decimals to the scope required by this unit
- procedures for handling and storing a range of measuring devices
- procedures for adjusting and zeroing a range of measuring devices
- methods of communicating measurements by drawings, as required
- safe work practices and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to perform engineering measurements.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing engineering measurements or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

#### Guidance information for assessment

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Specifications</b>	Drawings, sketches, job instructions, schematics, diagrams, technical manuals
<b>Range of measuring devices</b>	Protractors, combination squares, set squares, dial indicators, thermometers, tapes, rules, micrometers, vernier-scaled measuring equipment
<b>Basic calculations</b>	Calculations needed to assist in determining measurements where a reading of the graduated device is not sufficient, for example subtracting one measurement from another to give a third measurement. Examples of calculations needed are addition, subtraction, multiplication, division, fractions and decimals. Calculations may be made using a calculator
<b>Routine adjustments</b>	Validating the device using simple zeroing or scale adjustment
<b>Measurements</b>	Measuring length, squareness, flatness, angle, roundness, clearances or any other measurements that can be read off analog, digital or other measuring device
<b>Information</b>	Dimensions, instructions, base line or datum points

## Unit Sector(s)

<b>Unit sector</b>	
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**Co-requisite units**

Co-requisite units		

**Competency field**

Competency field	Measurement
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## MEM18001C Use hand tools

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers using a range of hand tools for a variety of general engineering applications.
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### Application of the Unit

<b>Application of the unit</b>	<p>Applications may include hand tools used for adjusting, dismantling, assembling and finishing of items or components, and the finishing, cutting, scraping of metallic and non-metallic material to size and shape. This includes simple tapping and threading and routine maintenance of hand tools.</p> <p>This unit should not be selected if the hand tool is dedicated to a single operation or machine and if only a machine specific/customised tool is used.</p> <p>When using hand held power tools or power tools used for hand held operations, refer to Unit MEM18002B (Use power tools/hand held operations).</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 2</b></p>
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### Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

<b>Prerequisite units</b>	

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use hand tools	<p>1.1.Hand tools are selected appropriate to the task requirements.</p> <p>1.2.Hand tools are used to produce desired outcomes to job specifications which may include finish, tension, size or shape.</p> <p>1.3.All safety requirements are adhered to before, during and after use.</p> <p>1.4.Unsafe or faulty tools are identified and marked for repair according to designated procedures before, during and after use.</p> <p>1.5.Routine maintenance of tools, including hand sharpening is undertaken according to standard operational procedures, principles and techniques.</p> <p>1.6.Hand tools are stored safely in appropriate location according to standard operational procedures and manufacturers' recommendations.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

- reading and following information on standard operating procedures
- following verbal instructions
- selecting hand tools appropriate to the task
- using hand tools safely
- identifying hand tool defects and marking for repair
- maintaining/sharpening hand tools using appropriate techniques
- storing hand tools in accordance with manufacturers'/standard operating procedures

#### Required knowledge

Look for evidence that confirms knowledge of:

- applications of different hand tools in a general engineering context
- common faults and/or defects in hand tools

**REQUIRED SKILLS AND KNOWLEDGE**

- procedures for marking unsafe or faulty tools for repair
- routine maintenance requirements for a range of hand tools
- storage location and procedures for a range of hand tools
- hazards and control measures associated with using hand tools
- use and application of personal protective equipment
- safe work practices and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to use hand tools for a range of general engineering applications.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with using hand tools or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

#### Guidance information for assessment

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Hand tools</b>	Hacksaws, hammers, punches, screwdrivers, sockets, wrenches, scrapers, chisels, gouges, wood planes and files of all cross-sectional shapes and types
<b>Job specifications</b>	Finish, tension, size or shape etc.
<b>Routine maintenance</b>	Cleaning, lubricating, tightening, simple tool repairs, hand sharpening and adjustments using engineering principles, tools, equipment and procedures

## Unit Sector(s)

<b>Unit sector</b>	
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## Co-requisite units

<b>Co-requisite units</b>	

## Competency field

Competency field	Maintenance and diagnostics
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## MEM18002B Use power tools/hand held operations

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers using a range of hand held power tools and fixed power tools for hand held operations for a variety of general engineering applications.
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to loosening and fastening items or components and shaping, finishing, cutting, grinding metallic and non-metallic materials and/or tool bits to size and shape.</p> <p>This unit should not be selected if the power tools used are dedicated to an operation or machine, e.g. nut-runner, air drill, power driver, etc.</p> <p>For using hand tools, see Unit MEM18001C (Use hand tools).</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 2</b></p>
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### Licensing/Regulatory Information

Not Applicable

### Pre-Requisites

<b>Prerequisite units</b>	

<b>Prerequisite units</b>	

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use power tools	<p>1.1.Power tools are selected appropriate to the task requirements.</p> <p>1.2.Power tools are used for a determined sequence of operations - which may include clamping, alignment and adjustment to produce desired outcomes - to job specifications which may include finish, size or shape.</p> <p>1.3.All safety requirements are adhered to before, during and after use.</p> <p>1.4.Unsafe or faulty tools are identified and marked for repair before, during and after use according to designated procedures.</p> <p>1.5.Operational maintenance of tools, including hand sharpening, is undertaken according to standard workplace procedures, principles and techniques.</p> <p>1.6.Power tools are stored safely in appropriate location according to standard workshop procedures and manufacturers' recommendations.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

- reading and following information on standard operating procedures
- following verbal instructions
- selecting power tools appropriate to the task
- using power tools safely
- using clamping/securing devices
- identifying power tool defects
- maintaining power tools using appropriate techniques
- sharpening tools/tool bits within the scope of this unit
- storing power tools according to manufacturers'/ standard operating procedures.

#### Required knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

Look for evidence that confirms knowledge of:

- application of different power tools
- clamping/securing methods
- adjustments/alignments to a range of power tools
- common faults and/or defects in power tools
- procedures for marking unsafe or faulty power tools for repair
- routine maintenance requirements of a range of power tools
- tool sharpening techniques for a range of power tools
- storage location and procedures of a range of power tools
- hazards/control measures associated with power tools
- use and application of personal protective equipment
- safe work practices and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to use power tools/hand held operations.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with using power tools/hand held operations or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning should not require language, literacy and numeracy skills beyond those required in this unit. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

#### Guidance information for assessment

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Power tools</b>	Electric or pneumatic/hydraulic drills, grinders, jigsaws, nibblers, cutting saws, sanders, planers, routers, pedestal drills and pedestal grinders
<b>Clamping</b>	Multigrips, vices, jigs and fixtures, clamps etc.
<b>Job specifications</b>	Finish, size or shape etc.
<b>Operational maintenance</b>	Hand sharpening, cleaning, lubricating, tightening Simple tool repairs and adjustments using engineering principles, tools, equipment and procedures to statutory and regulatory requirements

## Unit Sector(s)

<b>Unit sector</b>	
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## Co-requisite units

<b>Co-requisite units</b>	

## Competency field

Competency field	Maintenance and diagnostics
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## MEM18028B Maintain engine lubrication systems

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers assessing lubrication system operations and repairing or replacing faulty components.
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### Application of the Unit

<b>Application of the unit</b>	Lubrication system testing would require the obtaining of flow, temperature and pressure measurements.  <b>Band: A</b> <b>Unit Weight: 2</b>
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### Licensing/Regulatory Information

Not Applicable

### Pre-Requisites

<b>Prerequisite units</b>		
<b>Path 1</b>	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18055B	Dismantle, replace and assemble

<b>Prerequisite units</b>		
		engineering components

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess lubrication system operation	1.1.Relevant information is obtained and correctly interpreted prior to any testing. 1.2.Checks are undertaken safely and to prescribed procedures. 1.3.Flows, pressures and temperatures are correctly determined and recorded. 1.4.Faults are correctly isolated to component level and appropriate corrective action is determined. 1.5.Lubricant fluid characteristics, terminology and applications are understood. 1.6.Test equipment is used correctly. 1.7.Results of spectrographic or laboratory analysis are correctly evaluated and recommendations are made regarding adjustments to future maintenance activities. 1.8.Auxiliary lubrication systems are assessed for correct operation.
2. Rectify faulty components	2.1.Replacement components are correctly selected using manufacturers' data. 2.2.Components are removed and refitted to engine by following prescribed procedures. 2.3.Final adjustments are made that bring system in line with specifications. 2.4.Test and rectification activities are accurately recorded. 2.5.Engine is free of lubricant leaks after repair work is carried out. 2.6.Component wear and clearances are correctly determined using appropriate test equipment and manufacturers' recommendations.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

**REQUIRED SKILLS AND KNOWLEDGE**

Look for evidence that confirms skills in:

- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- planning and sequencing operations
- checking task-related information
- checking for conformance to specification
- checking the lubrication system
- determining and recording oil flows, pressures and temperatures
- identifying faulty components
- using test equipment
- obtaining/interpreting the results of lubricating oil tests
- checking auxiliary lubrication systems for correct operation where appropriate
- selecting replacement components
- removing, refitting and adjusting lubrication system components
- reporting and recording test and work activities
- checking lubrication system components for wear and clearance
- undertaking calculations and numerical operations within the scope of this unit

**Required knowledge**

Look for evidence that confirms knowledge of:

- the operation of the lubrication system
- the procedures for testing/checking lubrication
- hazards and control measures associated with checking and rectifying lubrication systems, including housekeeping
- the tests to be undertaken and equipment and techniques to be used to determine oil flows, pressures and temperatures
- the procedures for recording lubrication system test results
- the specifications of the lubrication system components
- the appropriate corrective action for faulty components
- the characteristics of lubricants and application of a variety of lubricants
- the procedures and reasons for analysing lubricating oil samples
- the likely causes of a range of out of specification test results
- the appropriate corrective action to be taken
- the implications of out of specification test results on maintenance schedules and requirements
- the reasons for installing auxiliary lubrication systems on diesel plant and equipment
- the operation of the auxiliary lubrication system
- the procedures for removing/replacing lubrication system components

**REQUIRED SKILLS AND KNOWLEDGE**

- the procedures for adjusting lubrication systems
- the procedures for recording test and repair activities
- the procedures for checking lubrication systems for leaks
- the measuring equipment/techniques used to determine lubrication system component wear and clearances
- safe work practices and procedures

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to maintain engine lubrication systems. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with maintaining engine lubrication systems, or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

**EVIDENCE GUIDE**

<b>Guidance information for assessment</b>	
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**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Faults**

Typical symptoms of faults would be lubrication pressures/temperatures that are too low/high; excessive or too little consumption/flow, etc.

**Test equipment**

Pressure/temperature and/or flow meters

**Adjustments**

May include setting of bypass/regulating/relief valves to specified pressures of flows

**Unit Sector(s)**

<b>Unit sector</b>	
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**Co-requisite units**

<b>Co-requisite units</b>		

## Competency field

Competency field	Maintenance and diagnostics
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## **MEM24001B Perform basic penetrant testing**

### **Modification History**

Not Applicable

## Unit Descriptor

<b>Unit descriptor</b>	This unit covers performing basic penetrant testing procedures in a range of industrial applications.
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to basic penetrant testing techniques on fabrications, structures and components across a wide range of industries and restricted to basic visible dye and/or process penetrant line methods.</p> <p>The work can relate to scheduled and unscheduled maintenance activities, using general tools, specific penetrant testing equipment as specified in maintenance documentation, testing procedures or operator instructions.</p> <p>Actual and potential defects are to be considered, together with ongoing abnormalities in fabrications, components and structures.</p> <p>Penetrant testing is performed on critical component or structural zones.</p> <p>All testing must be completed with particular attention to personal safety and OH&amp;S regulations. Certification against Australian standards may be achieved where assessment in this unit of competency is carried out in conjunction with an examining authority as described in ISO 9712.</p> <p>Materials and chemicals which are subject to codes and regulations - for example, chemicals, explosives, solvents, dangerous materials, acids, or noxious waste products - must be subject to safe work habits and must be stored and used in accordance with safe work practices.</p> <p>This unit should not be selected when Unit MEM24002B (Perform penetrant testing) has already been selected.</p> <p>Where power tools are required, Unit MEM18002B (Use power tools/hand held operations) should also be selected.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 2</b></p>
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

<b>Prerequisite units</b>		
<b>Path 1</b>	MEM18001C	Use hand tools

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare inspection areas for basic penetrant testing	1.1. Inspection areas are cleaned and prepared for testing using appropriate procedures and materials. 1.2. Preparation processes are carried out in accordance with the relevant procedures and OH&S requirements. 1.3. Inspection areas are visually assessed and obvious discontinuities are identified.
2. Perform basic penetrant testing	2.1. Nominated test is identified from standard operating procedures. 2.2. Test equipment is prepared in accordance with standard operating procedures. 2.3. Test media is selected and applied in accordance with workplace practices and specifications. 2.4. Penetrant test is carried out in accordance with relevant work instructions and OH&S requirements. 2.5. Penetrant testing equipment is maintained and stored in accordance with standard operating procedures and OH&S requirements.
3. Report the results of penetrant test(s)	3.1. Basic indications are checked and defects are identified in accordance with enterprise standards and/or procedures. 3.2. Basic indications are confirmed in accordance with enterprise standards and/or procedures. 3.3. Test results are reported in accordance with enterprise standards and/or procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

- preparing inspection areas
- identifying discontinuities
- applying procedures

## REQUIRED SKILLS AND KNOWLEDGE

- applying test media
- applying principles of penetrant testing techniques
- identifying defects
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures.
- following oral instructions
- entering routine and familiar information onto proformas and standard workplace forms

## Required knowledge

Look for evidence that confirms knowledge of:

- cleaning and preparation processes
- precleaning methods and their areas of use - solvents, vapour degrease, etching, detergents, paint removers, mechanical methods
- consequences of incorrect preparation
- procedures and OH&S requirements in relation to the preparation process
- basic concepts and principles of NDT; general terms, purpose of NDT and areas of application of NDT
- scope and basic description of test
- general properties of penetrants - penetrability, removability, visibility
- emulsifier types
- developer types
- use of standard test panels
- established inspection procedures and techniques
- types of discontinuities and their consequences
- procedure for carrying out penetrant testing
- penetrant application
- dwell times
- penetrant removal
- developer application
- dry powder
- development time
- factors affecting indications
- non-relevant indications
- post-cleaning methods and their areas of use
- basic maintenance and storage procedures for testing equipment
- OH&S requirements including storage requirements
- definition of a defect and common basic defects
- methods/procedures for reporting test results



## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to perform basic penetrant testing. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

#### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing basic penetrant testing or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

**EVIDENCE GUIDE**

<b>Guidance information for assessment</b>	
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**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Preparation processes**

Surface cleaning and drying

**Obvious discontinuities**

Observed changes in material homogeneity

**Reported**

Accurate identification of location and size of discontinuities

**Unit Sector(s)**

<b>Unit sector</b>	
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**Co-requisite units**

<b>Co-requisite units</b>		

## Competency field

Competency field	Non-destructive testing
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## MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers applies the <i>concepts of mathematics</i> to appropriate and simple engineering situations within the individual's area of engineering expertise.
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to technician level work that requires basic algebraic, trigonometric and statistical knowledge and skill.</p> <p><b>Band: 0</b></p> <p><b>Unit Weight: 4</b></p>
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### Licensing/Regulatory Information

Not Applicable

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

Employability skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use concepts of arithmetic in the solution of engineering problems	<p>1.1.Units of physical quantities are converted to facilitate engineering calculations.</p> <p>1.2.Calculations are performed to solve problems involving rational and irrational numbers.</p> <p>1.3.Scientific notation is used to represent numbers.</p> <p>1.4.Calculations are checked for reasonableness using estimating and approximating techniques.</p>
2. Solve engineering problems involving algebraic expressions with one independent variable	<p>2.1.Algebraic expressions are manipulated using mathematical operations in their correct order.</p>
3. Use two-dimensional geometry to solve practical problems	<p>3.1.Angles expressed in degrees are correctly converted to radians and vice versa.</p> <p>3.2.The perimeter, area, length and angles of a range of two-dimensional figures are correctly calculated.</p> <p>3.3.The volume and surface area of complex figures are correctly calculated.</p> <p>3.4.Points identified in terms of cartesian coordinates can be converted to polar coordinates and vice versa.</p>
4. Use trigonometry to solve practical problems	<p>4.1.Basic trigonometry functions are used to calculate the lengths of the sides of right-angled triangles.</p> <p>4.2.Inverse trigonometry functions are used to determine angles in a right-angled triangle given the lengths of two sides.</p> <p>4.3.The sine rule is used to determine the lengths of the sides of acute and obtuse angled triangles given one side and two angles.</p> <p>4.4.The cosine rule is used to determine the lengths of the sides of acute and obtuse angled triangles given two sides and one angle.</p>
5. Graph linear functions	<p>5.1.Linear functions are solved graphically and equations of straight lines are determined from the slope and one point, or two points.</p> <p>5.2.Two linear functions are solved simultaneously both algebraically and geometrically.</p> <p>5.3.The length and mid point of a line segment are determined.</p>
6. Solve quadratic	<p>6.1.Quadratic equations are solved.</p>

ELEMENT	PERFORMANCE CRITERIA
equations	6.2. Simultaneous linear and quadratic equations are solved.
7. Perform basic statistical calculations	7.1. Mean, median and mode are calculated from given data. 7.2. Standard deviation is calculated and interpreted employing graphical representation.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

- using and applying mathematical formulas:
  - logical thinking
  - problem solving
  - calculating
  - applying statistics
  - using computer numerical methods
  - drawing graphs

#### Required knowledge

Look for evidence that confirms knowledge of:

- transposing and evaluating formulae
- polynomials
- straight line coordinate geometry
- introduction to indices
- introduction to trigonometry
- circular functions
- trigonometry of oblique triangles
- trigonometric identities
- introduction to functions and their graphs

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	A person who demonstrates competency in this unit must be able to apply mathematical skills and knowledge to simple engineering applications. Evidence from tasks and projects should/may be used to complement and demonstrate integration of competency.
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
<b>Context of and specific resources for assessment</b>	<p>This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with applying mathematical concepts to engineering applications, or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<b>Method of assessment</b>	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

## EVIDENCE GUIDE

### Guidance information for assessment

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Concepts of mathematics

Include arithmetic, algebraic expressions with one independent variable, two-dimensional geometry, trigonometry, linear functions, basic quadratic functions, basic statistical methods

#### Correct order

Refers to the correct procedure when expanding brackets, factorising algebraic expressions, factorising quadratic expressions, simplifying algebraic fractions, transposing formulae, solving simple one variable equations, finding the quotient and remainder given a linear division

#### Complex figures

May include cones, pyramids, spheres, frustums and intersections of figures singularly or in combination

## Unit Sector(s)

### Unit sector

## Co-requisite units

<b>Co-requisite units</b>		

## Competency field

<b>Competency field</b>	Engineering technician
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## MSAENV272B Participate in environmentally sustainable work practices

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This competency covers the outcomes required to effectively measure current resource use and carry out improvements including those reducing negative environmental impacts of work practices.</p> <p>This unit is based on the sustainability guideline standard GCSSUS01A Participate in environmentally sustainable work practices.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This competency applies to operators/team members who are required to follow procedures so as to work in an environmentally sustainable manner. This ensures regulatory compliance and also aims at minimising environmental risks and maximises the environmental performance of the process and the organisation.</p> <p>It includes:</p> <ul style="list-style-type: none"> <li>• Resources used</li> <li>• Potential environmental hazards</li> <li>• Improving environmental performance (within scope of competency and authority).</li> </ul> <p>This competency applies to all sectors of the manufacturing industry and members of its value chain. It may also be applied to all sections of an organisation, including office, warehouse etc. This unit will need to be appropriately contextualised as it is applied across an organisation and across different industry sectors.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>	This unit has <b>no</b> prerequisites	

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify current resource use and environmental issues.	<p>1.1. Identify workplace <b><i>environmental and resource efficiency issues</i></b>.</p> <p>1.2. Identify resources used in own work role.</p> <p>1.3. <b><i>Measure</i></b> and record current usage of resources using <b><i>appropriate techniques</i></b>.</p> <p>1.4. Identify and report workplace environmental hazards to appropriate personnel.</p>
2. Comply with environmental regulations.	<p>2.1. Follow <b><i>procedures</i></b> to ensure <b><i>compliance</i></b>.</p> <p>2.2. Report environmental <b>incidents</b> to appropriate personnel.</p>
3. Seek opportunities to improve environmental practices and resource efficiency.	<p>3.1. Follow <b><i>enterprise plans</i></b> to improve environmental practices and resource efficiency.</p> <p>3.2. Make <b><i>suggestions</i></b> for improvements to workplace practices in own work area.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include the ability to:

- report as required by procedures
- follow procedures and instructions and respond to change
- ask questions and seek clarifications relating to work requirements

Reading and writing is required in order to interpret required procedures and complete required workplace forms/reports.

Numeracy is required to interpret numeric workplace information, readings and measurements, handle data as required and complete numeric components of workplace forms/reports.

#### Required knowledge

Competency includes sufficient knowledge to:

- have a basic understanding of sustainability
- know the environmental hazards/risks, resource use and inefficiencies associated with own workplace (at an appropriate level)
- know the relevant environmental and resource efficiency systems and procedures for own work area
- know the impact of laws and regulations to a level relevant to the work context

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competence in this unit must be able to provide evidence of the ability to follow workplace procedures according to instructions given and to participate in the improvement of environmental and resource efficient work practices at own level of responsibility. Evidence must be strictly relevant to the particular workplace role.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- identify and measure resources used in their job
- identify situations likely to lead to an environmental incident
- follow procedures related to environmental performance.

Consistent performance should be demonstrated. For example, look to see that:

- work is routinely to procedures
- the minimum of resources is used consistent with the job requirements, good practice and the procedures.

#### Context of and specific resources for assessment

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

Depending on the selected methods of assessment access may be required to:

- workplace procedures and plans
- documentation in relation to production, waste, overheads, hazard control/management
- reports from supervisors/managers
- case study/scenarios

#### Method of assessment

A holistic approach should be taken to the assessment.

Competence in this unit may be assessed:

- by demonstration in the workplace

<b>EVIDENCE GUIDE</b>	
	<ul style="list-style-type: none"><li>• using targeted questioning for appropriate portions</li><li>• by use of a suitable simulation and/or a range of case studies/scenarios</li><li>• by a combination of these techniques.</li></ul> <p>In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment.</p>
<b>Guidance information for assessment</b>	<p>Assessors need to be aware of any cultural issues that may affect responses to questions. Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.</p>

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<b>Procedures</b>	<p>All operations are performed in accordance with procedures including all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.</p>
<b>Environmental and resource efficiency issues</b>	<p>Environmental and resource efficiency issues include minimisation of environmental risks and maximisation of opportunities to improve business environmental performance and to promote more efficient production and consumption of natural resources, for example by:</p> <ul style="list-style-type: none"> <li>• minimisation of waste, through implementation of the waste management hierarchy</li> <li>• efficient and effective use of energy and other resources</li> <li>• seeking alternative sources of energy</li> <li>• efficient use of materials and appropriate disposal of waste</li> <li>• use of controls to minimise the risk of environmental damage from hazardous substances</li> <li>• efficient water use</li> <li>• reducing emissions</li> <li>• life cycle analysis applied to issues such as energy supply, materials, transport, production</li> </ul>
<b>Measure</b>	<p>Measure should be interpreted in a manner consistent with the scope of the job and may include things like:</p> <ul style="list-style-type: none"> <li>• counting the number of items entering/leaving a work area</li> <li>• reading indicators in the work area</li> <li>• obtaining relevant information from support</li> </ul>

<b>RANGE STATEMENT</b>	
	personnel <ul style="list-style-type: none"> <li>• other simple means</li> </ul>
<b>Appropriate techniques</b>	Appropriate techniques include: <ul style="list-style-type: none"> <li>• material fed to/consumed by plant/equipment</li> <li>• plant meters and gauges</li> <li>• job cards including kanbans</li> <li>• examination of invoices from suppliers</li> <li>• measurements made under different conditions</li> <li>• examination of relevant information and data.</li> </ul>
<b>Compliance</b>	Compliance includes meeting relevant federal, state and local government laws, by-laws, regulations and mandated codes of practice. It also includes any codes and standards that the enterprise applies voluntarily.
<b>Incidents</b>	Incidents include: <ul style="list-style-type: none"> <li>• breaches or potential breaches of regulations</li> <li>• occurrences outside of standard procedure which may lead to lower environmental performance.</li> </ul>
<b>Enterprise plans</b>	Enterprise plans include: <ul style="list-style-type: none"> <li>• documented policies and procedures</li> <li>• work plans to minimise waste, increase efficiency of water/energy use, minimise environmental hazards</li> </ul>
<b>Suggestions</b>	Suggestions include ideas that help to: <ul style="list-style-type: none"> <li>• prevent and minimise environmental risks and maximise opportunities</li> <li>• reduce emissions of greenhouse gases</li> <li>• reduce use of non-renewable resources</li> <li>• improve energy efficiency</li> <li>• increase use of renewable, recyclable, reusable and recoverable resources</li> <li>• reduce waste</li> <li>• increasing the reusability/recyclability of wastes/products</li> <li>• reduce water usage and/or water wastage.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Competitive manufacturing tools
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**Co-requisite units**

<b>Co-requisite units</b>		

## MSAENV472B Implement and monitor environmentally sustainable work practices

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This competency covers the outcomes required to effectively analyse the workplace in relation to environmentally sustainable work practices and to implement improvements and monitor their effectiveness.</p> <p>This unit is based on the sustainability guideline standard GCSSUS02A Implement and monitor environmentally sustainable work practices.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This competency applies to those who have responsibility for a specific area of work or who lead a work group or team. It addresses the knowledge, processes and techniques necessary to implement and monitor environmentally sustainable work practices, including the development of processes and tools.</p> <p>It includes:</p> <ul style="list-style-type: none"> <li>• Identifying areas for improvement</li> <li>• Developing plans to make improvements</li> <li>• Implementing and monitoring improvements in environmental performance.</li> </ul> <p>This competency applies to all sectors of the manufacturing industry and members of its value chain. It may also be applied to all sections of an organisation, including office, warehouse etc. This unit will need to be appropriately contextualised as it is applied across an organisation and across different industry sectors.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>	This unit has <b>no</b> prerequisites	

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Investigate current practices in relation to resource usage.	1.1 Identify environmental regulations applying to the enterprise. 1.2 Assess procedures for assessing <i>compliance</i> with environmental regulations. 1.3 Collect information on environmental and resource efficiency systems and procedures, and provide to the work group where appropriate. 1.4 Measure and record current resource usage by members of the work group. 1.5 Analyse and record current purchasing strategies. 1.6 Analyse current work processes to access information and data and assist in identifying areas for improvement.
2. Set targets for improvements.	2.1 Seek input from stakeholders, key personnel and specialists. 2.2 Access external sources of information and data as required. 2.3 Evaluate alternative solutions to workplace environmental issues. 2.4 Set efficiency targets.
3. Implement performance improvement strategies.	3.1 Source <i>techniques/tools</i> to assist in achieving targets. 3.2 Apply continuous improvement strategies to own work area of responsibility and communicate ideas and possible solutions to the work group and management. 3.3 Integrate environmental and resource efficiency improvement plans for own work group with other operational activities and implement them. 3.4 Seek suggestions and ideas about environmental and resource efficiency management from stakeholders and act upon them where appropriate. 3.5 Implement costing strategies to fully value environmental assets.
4. Monitor performance.	4.1 Document outcomes and communicate reports on targets to key personnel and stakeholders. 4.2 Evaluate strategies. 4.3 Set new targets and investigate and apply new tools and strategies. 4.4 Promote successful strategies and reward participants where possible.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- using relevant environmental and resource efficiency systems, tools and procedures
- applying quality assurance systems relevant to own work area
- applying relevant supply chain procedures
- measurement and calculation techniques
- communication/consultation skills to ensure information is supplied to the work group

Reading and writing is required to comprehend documentation and interpret environmental and energy efficiency requirements and to document and maintain records

Numeracy is required to interpret numeric workplace information, readings and measurements, handle data as required and complete numeric components of workplace forms/reports.

#### Required knowledge

Required knowledge includes:

- how to access and use relevant environmental and resource efficiency systems, tools and procedures
- understanding of best practice approaches relevant to own area of responsibility
- strategies to maximise opportunities and minimise impacts relevant to own work area
- relevant environmental and resource efficiency issues specific to industry practices
- methods for measuring and calculating resource usage

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competence in this unit must be able to provide evidence of the ability to implement and monitor integrated environmental and resource efficiency management policies and procedures within an organisation.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- monitor and investigate current resource usage
- develop plans to improve sustainability
- implement environmental improvements.

Consistent performance should be demonstrated. For example, look to see that:

- environmental performance is routinely monitored and investigated
- areas for improvements are followed through and the implemented changes are in turn monitored and investigated.

#### Context of and specific resources for assessment

This section should be read in conjunction with the range of variables for this unit of competency. Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation.

A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.

Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified

<b>EVIDENCE GUIDE</b>	
	for people with disabilities.
<b>Method of assessment</b>	<p>A holistic approach should be taken to the assessment.</p> <p>Competence in this unit may be assessed:</p> <ul style="list-style-type: none"> <li>• by demonstration in the workplace</li> <li>• using targeted questioning for appropriate portions</li> <li>• through use of specific project(s)</li> <li>• by use of a suitable simulation and/or a range of case studies/scenarios</li> <li>• by a combination of these techniques.</li> </ul> <p>In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment.</p>
<b>Guidance information for assessment</b>	<p>Assessors need to be aware of any cultural issues that may affect responses to questions.</p> <p>Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Procedures

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.

#### Environmental and resource efficiency issues

Environmental and resource efficiency issues include:

- addressing environmental and resource sustainability initiatives such as Environmental Management Systems, action plans, surveys and audits
- reference to standards, guidelines and approaches such as:
  - ISO 14001 Environmental Management Systems
  - Life Cycle Analyses
  - Cradle to cradle
  - Global Reporting Initiative
  - Ecological footprinting
  - Triple Bottom Line reporting
  - Product Stewardship
- determining enterprise's most appropriate waste treatment including waste to landfill, recycling, re-use and wastewater treatment
- applying the waste management hierarchy in the workplace
- initiating and/or maintaining appropriate enterprise procedures for operational energy consumption, including stationary energy and

<b>RANGE STATEMENT</b>	
	non stationary (transport) <ul style="list-style-type: none"> <li>• efficient use of water</li> <li>• minimising greenhouse gas emissions</li> <li>• use of controls to minimise the risk of environmental damage from hazardous substances</li> </ul>
<b>Measure</b>	Measuring techniques include: <ul style="list-style-type: none"> <li>• material fed to/consumed by plant/equipment</li> <li>• plant meters and gauges</li> <li>• job cards including kanbans</li> <li>• examination of invoices from suppliers</li> <li>• measurements made under different conditions</li> <li>• examination of relevant information and data</li> <li>• others as appropriate to the specific industry contexts.</li> </ul>
<b>Techniques and tools</b>	Techniques and tools may includeÂ : <ul style="list-style-type: none"> <li>• visual workplace concepts</li> <li>• measurement, display and/or recording devices</li> <li>• changed work practices/procedures</li> <li>• competence development and awareness training</li> <li>• process and equipment items</li> </ul>
<b>Compliance</b>	Compliance includes meeting relevant federal, state and local government laws, by-laws, regulations and codes of practice.
<b>Incidents</b>	Incidents include: <ul style="list-style-type: none"> <li>• breaches or potential breaches of regulations</li> <li>• occurrences outside of standard procedure which may lead to lower environmental performance</li> </ul>
<b>Purchasing strategies</b>	Purchasing strategies include: <ul style="list-style-type: none"> <li>• influencing suppliers to take up environmental sustainability</li> <li>• selecting materials/components with a lower environmental profile.</li> </ul>
<b>Stakeholders, key personnel and specialists</b>	Stakeholders, key personnel and specialists include individuals and groups both inside and outside the organisation that have some direct interest in the

<b>RANGE STATEMENT</b>	
	<p>enterprise's conduct, actions, products and services, including:</p> <ul style="list-style-type: none"> <li>• employees at all levels of the organisation</li> <li>• customers</li> <li>• suppliers</li> <li>• other organisations</li> <li>• key personnel within the organisation, and specialists outside it who may have particular technical expertise</li> </ul>
<b>Suggestions</b>	<p>Suggestions includes ideas that help to:</p> <ul style="list-style-type: none"> <li>• prevent and minimise environmental risks and maximise opportunities</li> <li>• reduce emissions of greenhouse gases</li> <li>• reduce use of non-renewable resources</li> <li>• make more efficient use of energy, water and other resources</li> <li>• maximise opportunities to re use and recycle materials</li> <li>• identify strategies to offset or mitigate environmental impacts. e.g. purchasing of carbon credits</li> <li>• express purchasing power through the selection of suppliers with improved environmental performance. e.g. purchasing renewable energy and materials with lower embedded carbon</li> <li>• eliminate the use of hazardous and toxic materials increasing the reusability/recyclability of wastes/products.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	
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**Competency field**

<b>Competency field</b>	Competitive manufacturing tools
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**Co-requisite units**

<b>Co-requisite units</b>		

## MSAENV672B Develop workplace policy and procedures for environmental sustainability

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	<p>This competency covers the outcomes required to develop and implement a workplace sustainability policy, including the modification of the policy to suit changed circumstances.</p> <p>This unit is based on the sustainability guideline standard GCSSUS03A Develop workplace policy and procedures for sustainability.</p>
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### Application of the Unit

<b>Application of the unit</b>	<p>This competency applies to team leaders/supervisors/managers who are required to develop approaches to environmental sustainability within workplaces, including the development and implementation of policy.</p> <p>It includes:</p> <ul style="list-style-type: none"><li>• Communicating with relevant stakeholders</li><li>• Developing and monitoring sustainability policies</li><li>• Reviewing and improving sustainability policies.</li></ul> <p>This competency applies to all sectors of the manufacturing industry. It may also be applied to all sections of an organisation, including office, warehouse etc.</p> <p>This unit will need to be appropriately contextualised as it is applied across an organisation and across different industry sectors.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>	This unit has <b>no</b> prerequisites	

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop workplace sustainability policy.	1.1 Define <i>scope of sustainability policy</i> . 1.2 Identify and consult <i>stakeholders</i> as a key component of the policy development process. 1.3 Review environmental sustainability <i>strategies</i> relevant to all stages of work covered by the policy 1.4 Make recommendations for policy options based on likely effectiveness, timeframes and cost. 1.5 Develop policy is that reflects the organisation's commitment to sustainability as an integral part of the business planning and as a business opportunity. 1.6 Agree upon appropriate methods of implementation.
2. Communicate the policy.	2.1 Promote the policy, including its expected outcome to key stakeholders. 2.2 Inform those involved in implementing the policy as to outcomes expected, activities to be undertaken and responsibilities assigned.
3. Implement the policy.	3.1 Develop and communicate procedures to help implement the policy. 3.2 Implement <i>strategies</i> for continuous improvement in resource efficiency. 3.3 Establish record systems for tracking continuous improvements in sustainability approaches and assign responsibilities.
4. Review policy implementation	4.1 Record outcomes and provide feedback to key personnel and stakeholders. 4.2 Investigate success or otherwise of policy. 4.3 Monitor records to identify trends that may require remedial action, and use to promote continuous improvement of performance. 4.4 Modify policy and or <i>procedures</i> as required to ensure improvements are made.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- developing and implementing systems and procedures to aid in the achievement of sustainability in the workplace
- applying quality assurance systems relevant to own enterprise
- accessing and applying other relevant enterprise policies, procedures and protocols
- relevant industry competency
- interpreting business/strategic plans

This unit requires the ability to:

- read and evaluate complex and formal documents such as policy and legislation
- research, analyse and present information
- prepare written reports requiring precision of expression and language and structures suited to the intended audience
- adjust communication to suit different audiences
- deal with different points of view and dissenting stakeholders.

#### Required knowledge

Required knowledge includes:

- understanding of relevant policy development and implementation processes and practices
- understanding of the principles, practices and available tools and techniques of sustainability management relevant to the particular industry context
- best practice approaches relevant to own work area
- equal employment opportunity, equity and diversity principles and occupational health and safety implications of policy/s being developed

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

A person who demonstrates competence in this unit must be able to provide evidence of the ability to develop and implement integrated sustainability policies and procedures within an enterprise. The review of the policy after implementation will also need to be evidenced.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- develop relevant policy and procedures that comply with the regulatory requirements and business plans
- develop a workable implementation strategy
- include measurable criteria for reviewing improvement.

Consistent performance should be demonstrated. For example, look to see that:

- policy implementation is reviewed
- policy is developed to become part of the routine practices of the organisation.

#### Context of and specific resources for assessment

This section should be read in conjunction with the range of variables for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation.

A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.

Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

#### Method of assessment

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by

<b>EVIDENCE GUIDE</b>	
	<p>the Elements, Performance Criteria and skills and knowledge.</p> <p>A holistic approach should be taken to the assessment.</p> <p>Competence in this unit may be assessed:</p> <ul style="list-style-type: none"> <li>• by demonstration in the workplace</li> <li>• using targeted questioning for appropriate portions</li> <li>• through use of specific project(s)</li> <li>• by use of a suitable simulation and/or a range of case studies/scenarios</li> <li>• by a combination of these techniques.</li> </ul> <p>In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment.</p>
<b>Guidance information for assessment</b>	<p>Assessors need to be aware of any cultural issues that may affect responses to questions.</p> <p>Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.</p>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Procedures

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.

#### Scope of sustainability policy

Scope of sustainability policy include:

- The area/s of environmental sustainability to be targeted and whether social and economic sustainability will be incorporated
- The parts of the enterprise to which it is to apply, including whether it is for the whole enterprise, one site, one work area or combinations of these
- An investigation of the particular business and market context of the industry/ enterprise
- Addressing sustainability initiatives through reference to standards, guidelines and approaches such as:
  - ISO 14001 Environmental Management Systems
  - Life Cycle Analyses
  - Cradle to grave/cradle to cradle
  - Global Reporting Initiative
  - Ecological Footprint Assessment
  - Triple Bottom Line reporting
  - Product Stewardship.

#### Stakeholders

Stakeholders include individuals and groups both inside and outside the organisation that have some

**RANGE STATEMENT**

	<p>direct interest in the enterprise's conduct, actions, products and services, including:</p> <ul style="list-style-type: none"> <li>• employees at all levels of the organisation</li> <li>• customers</li> <li>• suppliers</li> <li>• regulators</li> <li>• other organisations.</li> </ul>
<b>Strategies</b>	<p>Implementation strategies include:</p> <ul style="list-style-type: none"> <li>• awareness raising among stakeholders</li> <li>• training of staff in principles and techniques of sustainability</li> <li>• promotional activities.</li> </ul> <p>Continuous improvement strategies include ongoing measuring, improving and monitoring such as:</p> <ul style="list-style-type: none"> <li>• Plan, do, check, act cycles</li> <li>• Kaizen (continuous improvement)</li> <li>• Kaizen blitz (breakthrough improvement event)</li> <li>• Six sigma approaches</li> </ul> <p>Environmental sustainability strategies include:</p> <ul style="list-style-type: none"> <li>• reducing toxic material and hazardous chemical use</li> <li>• minimising resource use through changes in processes, facility design and management</li> <li>• supply chain and life cycle management approaches</li> <li>• sourcing renewable energy and low carbon footprint materials</li> <li>• reducing, re-using, recycling and waste reduction</li> <li>• product and process improvements</li> <li>• carbon offsets</li> <li>• reducing greenhouse gas and other emissions</li> </ul>

## Unit Sector(s)

Unit sector	
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## Competency field

Competency field	Competitive manufacturing tools
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## Co-requisite units

Co-requisite units		

# MSFGG2005 Apply basic glass handling

## Modification History

Release 1 - New unit of competency

## Application

This unit of competency covers handling and moving sheets of flat glass by hand safely and efficiently in a production, processing or installation environment, as an individual and involving teamwork for lifting.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Pre-requisite Unit

## Competency Field

## Unit Sector

Glass and Glazing

## Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- |                              |   |
|------------------------------|---|
| 1 Prepare for glass handling | 1.1 Work requirements in the form of type and quantity of glass to be relocated are identified from work instructions   |
|                              | 1.2 Work health and safety (WHS) requirements for movement of glass sheets by hand, including personal protective equipment, are observed throughout the work |
|                              | 1.3 Sheet glass to be moved is identified and weight, shape and points of balance, and dimensions estimated or calculated                                     |
|                              | 1.4 Tools and equipment and manual handling procedures for lifting, lowering and carrying, pushing and pulling are identified                                 |
|                              | 1.5 Risks to self, others, material and equipment are identified  |

- arising from the required lifting, load carrying, set down or movement of the glass
- 1.6 Need for glass lifting equipment or team lifting is determined and team lifting processes are considered for application
  - 1.7 Glass is checked for imperfections and damage prior to movement
  - 2 Plan glass movement
    - 2.1 Locations for glass storage are identified and routes to be followed determined
    - 2.2 Required clearances are compared to available space and adjustments made, as required
    - 2.3 Process for relocating glass is planned, including predicting and planning for potential difficulties
    - 2.4 Proposed process is checked against advisory standards and workplace procedures for compliance
  - 3 Relocate glass
    - 3.1 Actions of lifting, lowering and carrying, pulling and pushing are carried out in accordance with approved advisory standards and workplace procedures
    - 3.2 Team lifting tasks (where used) are coordinated according to approved advisory standards
    - 3.3 Planned process and route are followed and glass is relocated without damage to material, personnel or equipment
    - 3.4 Glass is labelled and stored following workplace procedures ensuring there are no projections
    - 3.5 Relocation is checked to see that it meets work requirements, and any differences reported
  - 4 Complete work
    - 4.1 Work area is cleaned and rubbish disposed of, as appropriate
    - 4.2 Workplace documentation is completed, as required

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency. Detail on appropriate performance levels for each furnishing unit of competency in reading, writing, oral communication and numeracy utilising the Australian Core Skills Framework (ACSF) are provided in the Furnishing Training Package Implementation Guide.

## Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Range is restricted to essential operating conditions and any other variables essential to the work environment.

- |  |  |
|--|--|
| <b>Unit context includes:</b>                  | <ul style="list-style-type: none"><li>• WHS requirements, including legislation, building codes, material safety management systems, hazardous and dangerous goods codes, and local safe operating procedures or equivalent</li><li>• work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements</li><li>• work requires individuals to demonstrate some discretion, judgement and problem solving</li></ul> |
| <b>Sheet glass includes:</b>                   | <ul style="list-style-type: none"><li>• glass for residential and commercial windows and doors</li><li>• tinted and heat reflecting</li><li>• mirrors and furniture applications</li><li>• annealed</li><li>• laminated glass</li></ul>  |
| <b>Tools and equipment include:</b>            | <ul style="list-style-type: none"><li>• glass handling equipment and hand tools</li><li>• lever and pump vacuum lifters</li><li>• slings</li><li>• trolleys</li></ul>  |
| <b>Team lifting processes include:</b>         | <ul style="list-style-type: none"><li>• nomination of team leader</li><li>• calculation of capacity of team</li><li>• techniques to be used</li><li>• identifying tasks of team members</li></ul>  |
| <b>Glass relocation includes:</b>              | <ul style="list-style-type: none"><li>• loading and unloading of trucks and skips</li></ul>  |
| <b>Personal protective equipment includes:</b> | <ul style="list-style-type: none"><li>• that prescribed under legislation, regulation and enterprise policies and practices:<ul style="list-style-type: none"><li>• gauntlets</li><li>• gloves</li><li>• safety glasses</li><li>• hard hats</li><li>• safety footwear</li><li>• aprons and overalls</li></ul></li></ul>  |
| <b>Information and procedures include:</b>     | <ul style="list-style-type: none"><li>• workplace procedures relating to the use of tools and equipment and personal protective equipment</li><li>• work instructions, including job sheets, cutting lists, plans,</li></ul>   |

- drawings and designs
- workplace procedures relating to reporting and communication
- manufacturer specifications and operational procedures

## Unit Mapping Information

Supersedes and is equivalent to LMFGG2005C Move glass sheets by hand.

## Links

MSA Training Package Companion Volumes - <http://mskills.com.au/training-packages/info/>

# Assessment Requirements for MSFGG2005 Apply basic glass handling

## Modification History

Release 1 - New unit of competency

## Performance Evidence

- Interpret work order and locate and apply relevant information
- Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
- Identify materials used in the work process
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to goods, equipment and products
  - maintain required production output and product quality
- Demonstrate safety and inspection procedures prior to lifting
- Safely lift and relocate annealed and laminated glass up to, and including, 1.2 m<sup>2</sup> (17 kg)
- Safely team lift and relocate annealed and laminated glass up to, and including, 4.5 m<sup>2</sup> (68 kg)
- Load and unload glass safely and efficiently
- Use mathematical ideas and techniques to correctly complete measurements, calculate area and estimate material requirements
- Communicate ideas and information to enable confirmation of work requirements and specifications and the reporting of work outcomes and problems, interpret basic plans and follow safety procedures
- Avoid backtracking, work flow interruptions or wastage
- Work with others and in a team by recognising dependencies and using cooperative approaches to optimise work flow and productivity

## Knowledge Evidence

- Qualities and characteristics of glass, including hazards and handling requirements and the behaviour of glass sheets when lifted and moved
- Work flow requirements in relation to the movement of glass by hand
- Principles, requirements and techniques of moving glass sheets by hand and loading and unloading glass to/from trucks and skips
- Workplace safety system requirements related to the moving of glass sheets by hand

## Assessment Conditions

- Assessors must:
  - hold training and assessment competencies as determined by the National Skills Standards Council (NSSC) or its successors
  - have vocational competency in the furnishing industry at least to the level being assessed with broad industry knowledge and experience, usually combined with a relevant industry qualification
  - be familiar with the current skills and knowledge used and have relevant, current experience in the furnishing industry.
- Assessment methods must confirm consistency of performance over time rather than a single assessment event and in a range of workplace relevant contexts.
- Assessment must be by observation of relevant tasks with questioning on underpinning knowledge and, where applicable, multimedia evidence, supervisor's reports, projects and work samples.
- Assessment is to be conducted on single units of competency or in conjunction with other related units of competency. Foundation skills are integral to competent performance in the unit and should not be assessed separately.
- Assessment must occur on the job or in a workplace simulated facility with relevant process, equipment, materials, work instructions and deadlines.
- Access is required to glass sheet to be relocated, workplace operating procedures and personal protection equipment, and an appropriate work area.

## Links

MSA Training Package Companion Volumes - <http://mskills.com.au/training-packages/info/>

# MSFGG3001 Store and handle glass

## Modification History

Release 1 - New unit of competency

## Application

This unit of competency covers handling, relocating and storing sheet glass in the workplace.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Pre-requisite Unit

## Competency Field

## Unit Sector

Glass and Glazing

## Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- |                                 |  |
|---------------------------------|--|
| 1 Identify storage requirements | 1.1 Work requirements in the form of type and quantity of glass to be handled and stored are identified from work instructions                             |
|                                 | 1.2 Work health and safety (WHS) requirements for storage and handling of glass, including personal protective equipment, are observed throughout the work |
|                                 | 1.3 Glass to be stored is checked against paperwork and any discrepancies reported according to workplace procedures                                       |
|                                 | 1.4 Storage requirements are identified from manufacturer instructions, statutory regulations and workplace procedures                                     |
|                                 | 1.5 Locations for glass storage are identified and checked for availability and suitability  |

- 1.6 The process and procedures for moving, handling and storing glass are identified
    - 1.7 Team lifting processes are considered for application, including nomination of a team leader and calculating the capacity of the team
- 2 Prepare for glass movement
  - 2.1 Work sequence is planned in a logical order to suit the job in accordance with workplace procedures
  - 2.2 Tools, equipment and materials are selected and checked prior to use to ensure they are appropriate for the work, serviceable and in a safe condition
  - 2.3 Planned route for relocating glass is determined and checked for hazards, and the work area is cleared of obstructions
  - 2.4 Risks to self and others are identified and acted upon according to statutory requirements and workplace procedures
  - 2.5 Required clearances are compared to available space and adjustments made
  - 2.6 Process for relocating glass is planned, including predicting and planning for potential difficulties
  - 2.7 Proposed process is checked against codes of practice and workplace procedures for compliance
- 3 Relocate glass
  - 3.1 Safety checks are carried out on required handling equipment, and any damaged or worn parts reported according to workplace practices
  - 3.2 Handling equipment is operated safely and correctly in accordance with manufacturer instructions and workplace procedures
  - 3.3 Planned process and route are followed and glass relocated without damage to material, personnel or equipment
  - 3.4 Glass is labelled and stored following workplace procedures ensuring there are no projections
  - 3.5 Relocation is checked to see that it meets work requirements, and any differences are reported

- |   |                           |     |  |
|---|---------------------------|-----|--|
| 4 | Complete job requirements | 4.1 | Handling equipment is cleaned, maintained and stored according to workplace procedures |
|   |                           | 4.2 | Work area is cleaned and rubbish disposed of, as appropriate                           |
|   |                           | 4.3 | Workplace documentation is completed, as required, according to workplace procedures   |

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency. Detail on appropriate performance levels for each furnishing unit of competency in reading, writing, oral communication and numeracy utilising the Australian Core Skills Framework (ACSF) are provided in the Furnishing Training Package Implementation Guide.

## Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Range is restricted to essential operating conditions and any other variables essential to the work environment.

- |  |  |
|--|--|
| <b>Unit context includes:</b>                  | <ul style="list-style-type: none"><li>• WHS requirements, including legislation, building codes, material safety management systems, hazardous and dangerous goods codes, and local safe operating procedures or equivalent</li><li>• work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements</li><li>• work requires individuals to demonstrate some discretion, judgement and problem solving</li></ul> |
| <b>Glass includes:</b>                         | <ul style="list-style-type: none"><li>• annealed</li><li>• laminated</li><li>• toughened</li><li>• patterned</li><li>• tinted</li><li>• heat reflecting</li><li>• domestic and commercial glass</li><li>• mirrors</li><li>• shower screens</li><li>• furniture glass</li><li>• safety glass</li><li>• patterned or specialty glass</li></ul>   |
| <b>Handling and storing glass includes:</b>    | <ul style="list-style-type: none"><li>• handling and storing of glass in quantities appropriate to the workplace requirement</li><li>• team lifting as well as the application of individual skills</li></ul>  |
| <b>Tools and equipment include:</b>            | <ul style="list-style-type: none"><li>• hand trolleys</li><li>• pallet truck</li><li>• gantry crane</li><li>• scissors</li><li>• slings</li><li>• air and tilt tables</li><li>• vacuum lifters</li><li>• crawler track</li><li>• articulating spider lifts</li></ul>   |
| <b>Personal protective equipment includes:</b> | <ul style="list-style-type: none"><li>• that prescribed under legislation, regulation and enterprise policies and practices:</li></ul>   |

**Information and procedures include:**

- gauntlets
  - gloves
  - safety glasses
  - hard hats
  - safety footwear
  - aprons and overalls
- 
- workplace procedures relating to the use of tools and equipment and personal protective equipment
  - work instructions, including job sheets, cutting lists, plans, drawings and designs
  - workplace procedures relating to reporting and communication
  - manufacturer specifications and operational procedures
  - quality standards, including AS/NZS 4667:2000 Quality requirements for cut-to-size and processed glass

**Unit Mapping Information**

Supersedes and is equivalent to LMFGG3001C Store and handle glass.

**Links**

MSA Training Package Companion Volumes - <http://mskills.com.au/training-packages/info/>

# Assessment Requirements for MSFGG3001 Store and handle glass

## Modification History

Release 1 - New unit of competency

## Performance Evidence

- Interpret work order and locate and apply relevant information
- Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
- Identify materials used in the work process
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to goods, equipment and products
  - maintain required production output and product quality
- Identify equipment for the handling and storage of glass and calculate the weight of glass
- Handle annealed and/or laminated glass up to, and including, 2.3 m<sup>2</sup> (17 kg)
- Team handle annealed and/or laminated glass up to, and including, 4.5 m<sup>2</sup> (68 kg)
- Relocate single sheets of glass by vacuum and/or scissor grabs up to 4.5 m<sup>2</sup> (170 kg)
- Safely load and secure glass
- Use mathematical ideas and techniques to correctly complete measurements, calculate area and estimate material requirements
- Communicate ideas and information to enable confirmation of work requirements and specifications and the reporting of work outcomes and problems, interpret basic plans and follow safety procedures
- Avoid backtracking, work flow interruptions or wastage
- Work with others and in a team by recognising dependencies and using cooperative approaches to optimise work flow and productivity

## Knowledge Evidence

- Qualities and characteristics of glass, including hazards and handling requirements
- Work flow requirements in relation to the movement and storage of glass
- Glass storage requirements
- Correct identification of equipment, processes and procedures
- Workplace safety system requirements related to the handling, relocation and storage of glass

## Assessment Conditions

- Assessors must:
  - hold training and assessment competencies as determined by the National Skills Standards Council (NSSC) or its successors
  - have vocational competency in the furnishing industry at least to the level being assessed with broad industry knowledge and experience, usually combined with a relevant industry qualification
  - be familiar with the current skills and knowledge used and have relevant, current experience in the furnishing industry.
- Assessment methods must confirm consistency of performance over time rather than a single assessment event and in a range of workplace relevant contexts.
- Assessment must be by observation of relevant tasks with questioning on underpinning knowledge and, where applicable, multimedia evidence, supervisor's reports, projects and work samples.
- Assessment is to be conducted on single units of competency or in conjunction with other related units of competency. Foundation skills are integral to competent performance in the unit and should not be assessed separately.
- Assessment must occur on the job or in a workplace simulated facility with relevant process, equipment, materials, work instructions and deadlines.
- Access is required to glass to be stored, workplace operating procedures, personal protective equipment, and an appropriate work area and others to assist, as required.

## Links

MSA Training Package Companion Volumes - <http://mskills.com.au/training-packages/info/>

# MSFUP3001 Apply traditional foundations to upholstered furniture

## Modification History

Release 1 - New unit of competency

## Application

This unit of competency covers applying traditional upholstery foundations to upholstered furniture.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Pre-requisite Unit

## Competency Field

## Unit Sector

Upholstery

## Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- |                  |  |
|------------------|--|
| 1 Plan operation | 1.1 Work order or instructions are used to confirm type of traditional furniture foundations to be applied           |
|                  | 1.2 Work health and safety (WHS) requirements, including personal protection needs, are observed throughout the work |
|                  | 1.3 Attaching methods are identified and fitting sequence is determined  |
|                  | 1.4 Suitable work area is selected and prepared  |
|                  | 1.5 Tools and hardware for the application of the foundation are selected and checked for safe operation             |
|                  | 1.6 Traditional foundation components are selected as  |

- required
- 2 Prepare and attach traditional foundation
    - 2.1 Mounting points are measured and marked on the frame, as required
    - 2.2 Traditional foundation is positioned and appropriate fasteners are used to secure it to the item
    - 2.3 Appropriate fasteners are used to secure the traditional foundation, as required
    - 2.4 The applied foundation is inspected for fit, finish and quality with those requiring reworking/refitting being tagged for further reprocessing or recycling/disposal in accordance with workplace practices
    - 2.5 Process is monitored and conditions which may affect quality standards are noted
    - 2.6 Variations to normal activities are reported in accordance workplace procedures
    - 2.7 Authorised changes in standard operating procedures and work order or instructions are implemented
  - 3 Complete work
    - 3.1 Workplace documentation, including stock usage, is completed in accordance with workplace procedures
    - 3.2 Faulty and/or defective equipment is tagged and reported in accordance with workplace procedures
    - 3.3 Waste and scrap are removed in accordance with workplace procedures
    - 3.4 Tools and equipment used are cleaned, inspected for serviceable condition and stored appropriately in accordance with workplace procedures
    - 3.5 Equipment is maintained and work area is cleaned in accordance with workplace procedures

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency. Detail on appropriate performance levels for each furnishing unit of competency in reading, writing, oral communication and numeracy utilising the Australian Core Skills Framework (ACSF) are provided in the Furnishing Training Package Implementation Guide.

## Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Range is restricted to essential operating conditions and any other variables essential to the work environment.

- |  |  |
|--|--|
| <b>Unit context includes:</b>                  | <ul style="list-style-type: none"><li>• WHS requirements, including legislation, building codes, material safety management systems, hazardous and dangerous goods codes, and local safe operating procedures or equivalent</li><li>• work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements</li><li>• work requires individuals to demonstrate some discretion, judgement and problem solving</li></ul> |
| <b>Tools and equipment include:</b>            | <ul style="list-style-type: none"><li>• tape measure</li><li>• web strainer</li><li>• scissors</li><li>• upholstery hammer</li><li>• tack lifter</li><li>• staple gun</li><li>• pincers</li><li>• long-nose pliers</li></ul>   |
| <b>Materials include:</b>                      | <ul style="list-style-type: none"><li>• webbing</li><li>• coil springs</li><li>• flock</li><li>• wadding</li><li>• coconut fibre</li><li>• bridle</li><li>• bridle ties</li><li>• solid timber base</li><li>• padded frames</li><li>• hard edge</li><li>• hessian</li><li>• calico</li><li>• lacing twine</li><li>• mattress twine</li></ul>   |
| <b>Personal protective equipment includes:</b> | <ul style="list-style-type: none"><li>• that prescribed under legislation, regulations and enterprise policies and practices:<ul style="list-style-type: none"><li>• safety glasses/goggle</li><li>• hair nets</li></ul></li></ul>   |

**Information and procedures include:**

- ear muffs/plugs
- gloves
- footwear and protective clothing
- workplace procedures relating to the use of tools and equipment
- work instructions, including job sheets, cutting lists, plans, drawings and designs
- workplace procedures relating to reporting and communication
- manufacturer specifications and operational procedures

## Unit Mapping Information

Supersedes and is equivalent to LMFUP3001B Apply traditional foundations to upholstered furniture.

## Links

MSA Training Package Companion Volumes - <http://mskills.com.au/training-packages/info/>

# **Assessment Requirements for MSFUP3001 Apply traditional foundations to upholstered furniture**

## **Modification History**

Release 1 - New unit of competency

## **Performance Evidence**

- Interpret work order and locate and apply relevant information
- Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
- Identify materials used in the work process
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to goods, equipment and products
  - maintain required production output and product quality
- Interlace and turn back jute webbing, tie off and lace up coil springs, fit hessian bridles (loose and/or deep), coconut fibre, wadding and a stitched edge (one blind, one top) in a minimum of two (2) items of traditional upholstered furniture
- Use mathematical ideas and techniques to correctly complete measurements, calculate area and estimate material requirements
- Communicate ideas and information to enable confirmation of work requirements and specifications and the reporting of work outcomes and problems, interpret basic plans and follow safety procedures
- Avoid backtracking, work flow interruptions or wastage
- Work with others and in a team by recognising dependencies and using cooperative approaches to optimise work flow and productivity

## **Knowledge Evidence**

- Work flow in relation to furniture production and refurbishment
- Features of range of traditional foundation types and fittings
- Materials and techniques used in the application of traditional foundations to upholstered furniture
- Materials used in the application of traditional foundations
- Identification of equipment, processes and procedures required for the application of traditional foundations to upholstered furniture

## Assessment Conditions

- Assessors must:
  - hold training and assessment competencies as determined by the National Skills Standards Council (NSSC) or its successors
  - have vocational competency in the furnishing industry at least to the level being assessed with broad industry knowledge and experience, usually combined with a relevant industry qualification
  - be familiar with the current skills and knowledge used and have relevant, current experience in the furnishing industry.
- Assessment methods must confirm consistency of performance over time rather than a single assessment event and in a range of workplace relevant contexts.
- Assessment must be by observation of relevant tasks with questioning on underpinning knowledge and, where applicable, multimedia evidence, supervisor's reports, projects and work samples.
- Assessment is to be conducted on single units of competency or in conjunction with other related units of competency. Foundation skills are integral to competent performance in the unit and should not be assessed separately.
- Assessment must occur on the job or in a workplace simulated facility with relevant process, equipment, materials, work instructions and deadlines.
- Access is required to furniture frames and traditional fittings, such as webbing stock, coil springs, padding materials, and a work order.

## Links

MSA Training Package Companion Volumes - <http://mskills.com.au/training-packages/info/>

## **MSS403030A Improve cost factors in work practices**

### **Modification History**

New unit, superseding MSACMT430A Improve cost factors in work practices - Equivalent

### **Unit Descriptor**

This unit of competency covers the skills and knowledge required to evaluate the product or process outcomes of a team in terms of their cost components and to be able to determine, in general terms, the cost impacts of alternative actions.

### **Application of the Unit**

This unit applies to a person who is required to assess the relative costs of alternatives and use this as one of the key factors in decision making. Typical decisions include the efficient organisation of own work and that of others in a work area or within a team and the improvement of throughput and cycle times.

Decisions are made within the scope of the authority of the individual and other employees in the area or team and according to procedures.

This unit primarily requires the application of skills associated with communication and information gathering, teamwork and problem solving to analyse the cost components of work processes. Initiative and enterprise, and planning and organising are also required to identify opportunities for improved cost-efficiency. This unit also requires a degree of self-management and learning to effectively operate and maintain skills and performance.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

1	Analyse cost components of work area or team function	1.1	Identify cost components in the product or process
		1.2	Identify costs factors under control of area or employees in the team
		1.3	Identify causes of variability in costs
		1.4	Analyse impact of costs on production or process activities undertaken
2	Improve cost-efficiency of processes and procedures	2.1	Identify methods of improving productivity and/or reducing costs within area or team's responsibility
		2.2	Determine cost/benefit ratio of alternative methods of improving productivity and/or reducing costs
		2.3	Consult with all relevant stakeholders regarding possible changes
		2.4	Recommend changes which will increase productivity and reduce cost and variability
		2.5	Implement recommended changes in consultation with relevant stakeholders

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

Required skills include:

- identifying fixed and variable costs in products or processes
- analysing costs and determining those that can be controlled by the individuals in an area or team
- analysing costs over time and identifying variability in cost components
- determining cost/benefit ratios
- communicating and negotiating with others on changes using a variety of mediums

### Required knowledge

Required knowledge includes:

- cost components of products made
- costs concepts, such as expense, income and cost/benefit
- major cost contributors to product (e.g. energy, materials, labour and distribution, and so on) depending on the product and process)
- the difference between internally and externally controlled costs
- difference between overhead, labour and consumables

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>A person who demonstrates competency in this unit must be able to provide evidence of the ability to:</p> <ul style="list-style-type: none"><li>• identify the scope of their own work and the team or area work and relate it to the overall flow of work in the organisation</li><li>• express cost factors in specific terms (e.g. cost per item, process and task)</li><li>• identify and express cost factors in basic financial</li></ul>
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	<p>terms</p> <ul style="list-style-type: none"> <li>analyse variability in costs and recommend improvements</li> <li>use cost/benefit to select preferred improvement strategies.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment of performance must be undertaken in a workplace using or implementing one or more competitive systems and practices.</p> <p>Access may be required to:</p> <ul style="list-style-type: none"> <li>workplace procedures and plans relevant to work area</li> <li>specifications and documentation relating to planned, currently being implemented, or implemented changes to work processes and procedures relevant to the assessee</li> <li>documentation and information in relation to production, waste, overheads and hazard control/management</li> <li>reports from supervisors/managers</li> <li>case studies and scenarios to assess responses to contingencies.</li> </ul>
<b>Method of assessment</b>	<p>A holistic approach should be taken to the assessment.</p> <p>Competence in this unit may be assessed by using a combination of the following to generate evidence:</p> <ul style="list-style-type: none"> <li>demonstration in the workplace</li> <li>workplace project(</li> <li>suitable simulation</li> <li>case studies/scenarios (particularly for assessment of contingencies, improvement scenarios, and so on)</li> <li>targeted questioning</li> <li>reports from supervisors, peers and colleagues (third-party reports)</li> <li>portfolio of evidence.</li> </ul> <p>In all cases it is expected that practical assessment will be combined with targeted questioning to assess underpinning knowledge.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the candidate and the work being</p>

	performed.
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## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Competitive systems and practices</b>	<p>Competitive systems and practices may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• lean operations</li> <li>• agile operations</li> <li>• preventative and predictive maintenance approaches</li> <li>• monitoring and data gathering systems, such as Systems Control and Data Acquisition (SCADA) software, Enterprise Resource Planning (ERP) systems, Materials Resource Planning (MRP) and proprietary systems</li> <li>• statistical process control systems, including six sigma and three sigma</li> <li>• Just in Time (JIT), kanban and other pull-related operations control systems</li> <li>• supply, value, and demand chain monitoring and analysis</li> <li>• 5S</li> <li>• continuous improvement (kaizen)</li> <li>• breakthrough improvement (kaizen blitz)</li> <li>• cause/effect diagrams</li> <li>• overall equipment effectiveness (OEE)</li> <li>• takt time</li> <li>• process mapping</li> <li>• problem solving</li> <li>• run charts</li> <li>• standard procedures</li> <li>• current reality tree</li> </ul> <p>Competitive systems and practices should be interpreted so as to take into account:</p> <ul style="list-style-type: none"> <li>• the stage of implementation of competitive systems and practices,</li> </ul>
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	<ul style="list-style-type: none"> <li>the size of the enterprise</li> <li>the work organisation, culture, regulatory environment and the industry sector</li> </ul>
<b>Cost components</b>	<p>Cost components may include:</p> <ul style="list-style-type: none"> <li>fixed and variable costs, such as power/energy, materials, plant and equipment, salary and wages, and office expenses (e.g. telephone)</li> <li>government taxes and charges</li> </ul>
<b>Variability in costs</b>	<p>Variability in costs should be assessed over a suitable time. The time should be sufficient to identify:</p> <ul style="list-style-type: none"> <li>fluctuations in variable costs related to different volumes of sales, production or operations</li> <li>abnormal cost fluctuations due to poor design of product or process, poor scheduling, faults, breakdowns and other waste</li> </ul>
<b>Process</b>	<p>Process includes all functions that go to meet customer requirements as well as other required functions (e.g. regulatory related functions). Examples include:</p> <ul style="list-style-type: none"> <li>design</li> <li>production</li> <li>maintenance</li> <li>logistics</li> <li>office processes</li> </ul>
<b>Procedures</b>	<p>Procedures may include:</p> <ul style="list-style-type: none"> <li>work instructions</li> <li>standard operating procedures</li> <li>drawings and specifications</li> <li>manuals</li> <li>formulas/recipes</li> <li>batch sheets</li> <li>temporary instructions and similar instructions provided for the smooth running of the organisation</li> <li>good operating practice as may be defined by industry codes of practice (e.g. good manufacturing practice (GMP) and responsible care)</li> <li>government regulations</li> </ul> <p>Procedures may be:</p> <ul style="list-style-type: none"> <li>written, verbal, computer based or in some other format</li> </ul>
<b>Benefits</b>	<p>Benefits should include:</p>

	<ul style="list-style-type: none"><li>positive benefits as well as negative benefits, such as quality, safety, reliability and similar issues which may be impacted by a cost saving</li></ul>
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## Unit Sector(s)

Unit sector

Competitive systems and practices

## Custom Content Section

Not applicable.

## PSPTRAN501A Provide specialist vehicle technical advice

### Modification History

Release	TP Version	Comments
3	PSP12V1	Unit descriptor edited.
2	PSP04V4.2.	Layout adjusted. No changes to content.
1	PSP04V4.1	Primary release.

### Unit Descriptor

This unit covers detailed technical inspections and specialist vehicle technical advice for situations that may include court proceedings, coronial inquiries, police and other agencies. It includes conducting a detailed technical inspection, interpreting the inspection data to inform an opinion, conducting technical research on inspection data, and formulating and providing an expert opinion on the results.

In practice, providing specialist vehicle technical advice may overlap with other generalist or specialist public sector work activities such as promoting ethical practice and compliance with legislation, coordinating resources, undertaking research and analysis.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Application of the Unit

Not applicable.

### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Elements are the essential outcomes of the unit of competency. Together, performance criteria specify the requirements for competent performance. Text in ***bold italics*** is explained in the Range Statement following.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Conduct a detailed vehicle inspection	<p>1.1 Suitable location for detailed <i>vehicle</i> examination is confirmed and other relevant personnel are notified.</p> <p>1.2 Materials and <i>equipment</i> required to conduct the vehicle <i>examination</i> are prepared.</p> <p>1.3 Other relevant motor vehicle documentation is accessed and reviewed to establish key information on the vehicle under examination.</p> <p>1.4 Vehicle identity is verified.</p> <p>1.5 All relevant vehicle structure and components are examined and tested as necessary.</p> <p>1.6 Occupational health and safety requirements applicable to the examination are applied.</p> <p>1.7 Vehicle irregularities are recorded in accordance with legislative requirements and standard procedures.</p>
2. Interpret examination data	<p>2.1 All relevant data/ information is gathered, recorded and confirmed.</p> <p>2.2 All relevant information is interpreted and analysed to assist in the identification of the issue/s.</p>
3. Undertake technical research	<p>3.1 Relevant standards and specifications are identified and accessed.</p> <p>3.2 Research is undertaken on all the information gathered relevant to the examination.</p> <p>3.3 Advice is sought to clarify any unclear findings in accordance with organisational policy and procedures.</p> <p>3.4 Research findings are reported and presented in appropriate language, style and format to suit the intended audience.</p> <p>3.5 Supporting information and explanations are provided as required.</p>
4. Form and provide an opinion	<p>4.1 Options related to the provision of advice are identified and evaluated.</p> <p>4.2 An opinion is formed that is logical, reasoned and defensible, and documented in accordance with legislation, policy and procedures.</p> <p>4.3 When appropriate, opinions on actions to be taken are offered.</p> <p>4.4 A comprehensive report supporting the opinions is provided.</p>

## Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

### Skill requirements

Look for evidence that confirms skills in:

- assessing vehicle standards
- using diagnostic techniques
- researching, interpreting and analysing information and data
- writing complex reports
- using personal computer, Internet, word processing and databases for research, analysis and interpretation
- using effective communication including presentation, and listening skills
- responding to diversity, including gender and disability
- tailoring information to suit the needs of diverse audiences
- applying public sector legislation such as occupational health and safety and environmental procedures in the context of providing specialist vehicle technical advice

### Knowledge requirements

Look for evidence that confirms knowledge and understanding of:

- specialist technical area
- State/Territory and Commonwealth legislation and regulations
- Australian Design Rules (ADRs), Australian Vehicle Standards Rules (AVSR), modification codes, vehicle standards, manufacturers' standards
- chain of evidence provisions
- codes of practice
- written off vehicle register (WOVR)
- occupational health and safety relating to the provision of specialist vehicle technical advice
- contingency management - process for unplanned events
- court protocols

## Evidence Guide

The Evidence Guide specifies the evidence required to demonstrate achievement in the unit of competency as a whole. It must be read in conjunction with the Unit descriptor, Performance Criteria, the Range Statement and the Assessment Guidelines for the Public Sector Training Package.

### Units to be assessed together

- *Pre-requisite* units that must be achieved prior to this unit: *Nil*
- *Co-requisite* units that must be assessed with this unit: *Nil*
- *Co-assessed units* that may be assessed with this unit to increase the efficiency and realism of the assessment process include, but are not limited to:
  - PSPETHC501B Promote the values and ethos of public service
  - PSPGOV504B Undertake research and analysis
  - PSPGOV507A Undertake negotiations
  - PSPGOV508A Manage conflict
  - PSPLEGN501B Promote compliance with legislation in the public sector
  - PSPOHS501A Monitor and maintain workplace safety

### Overview of evidence requirements

In addition to integrated demonstration of the elements and their related performance criteria, look for evidence that confirms:

- the knowledge requirements of this unit
- the skill requirements of this unit
- application of the Employability Skills as they relate to this unit (see Employability Summaries in Qualifications Framework)
- provision of specialist vehicle technical advice in a range of (3 or more) contexts (or occasions, over time)

### Resources required to carry out assessment

These resources include:

- legislation, policy, procedures and protocols relating to specialist vehicle technical advice
- case studies and workplace scenarios to capture the range of situations likely to be encountered when providing specialist vehicle technical advice

### Where and how to assess evidence

Valid assessment of this unit requires:

- a workplace environment or one that closely resembles normal work practice and replicates the range of conditions likely to be encountered when providing specialist vehicle technical advice, including coping with difficulties, irregularities and breakdowns in routine

- provision of specialist vehicle technical advice in a range of (3 or more) contexts (or occasions, over time)

Assessment methods should reflect workplace demands, such as literacy, and the needs of particular groups, such as:

- people with disabilities
- people from culturally and linguistically diverse backgrounds
- Aboriginal and Torres Strait Islander people
- women
- young people
- older people
- people in rural and remote locations

Assessment methods suitable for valid and reliable assessment of this competency may include, but are not limited to, a combination of 2 or more of:

- case studies
- questioning
- scenarios
- simulation or role plays
- authenticated evidence from the workplace and/or training courses

**For consistency of assessment**

Evidence must be gathered over time in a range of contexts to ensure the person can achieve the unit outcome and apply the competency in different situations or environments

## Range Statement

The Range Statement provides information about the context in which the unit of competency is carried out. The variables cater for differences between States and Territories and the Commonwealth, and between organisations and workplaces. They allow for different work requirements, work practices and knowledge. The Range Statement also provides a focus for assessment. It relates to the unit as a whole. Text in ***bold italics*** in the Performance Criteria is explained here.

***Vehicles*** may be:

- loaded or unloaded during inspection
- all types, including special purpose vehicles
- imported vehicles
- modified and other high risk vehicles

***Equipment*** may include:

- micrometer
- roller brake tester
- shaker plates
- jacking equipment
- gauges

***Examinations*** may be:

- undertaken on all types of vehicles
- carried out alone or in conjunction with other personnel
- undertaken in full range of diverse conditions
- in response to police request, coronial or other inquiries

## Unit Sector(s)

Not applicable.

## Competency field

Road Transport Compliance.

## RIICOM201D Communicate in the workplace

### Modification History

Release	Comment
1	This unit replaces RIICOM201A Communicate in the workplace
2	Editorial corrections.
3	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

### Application

This unit describes a participant's skills and knowledge required to communicate in the workplace within the Resources and Infrastructure Industries. This unit is appropriate for those working in operational roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Elements and Performance Criteria

1 Plan and prepare for workplace communication using equipment and systems	<p>1.1 Access, interpret and apply communication site documentation and ensure the work activity is compliant</p> <p>1.2 Identify and access communication equipment and system components</p> <p>1.3 Establish and maintain communication with others</p> <p>1.4 Access and apply communication equipment and systems safety procedures</p>
2 Communicate using communication equipment and systems	<p>2.1 Identify and select the most appropriate method of communication</p> <p>2.2 Use communication equipment and systems</p> <p>2.3 Acknowledge and respond to communication</p> <p>2.4 Take, confirm and pass messages on promptly to the others</p> <p>2.5 Pass communications in a clear and concise manner</p> <p>2.6 Follow safety procedures, including the passing of reports and observance of local communications and emergency procedures</p> <p>2.7 Identify and report faults in communication equipment</p>
3 Carry out face-to-face routine communication	<p>3.1 Speak clearly and listen carefully to promote understanding</p> <p>3.2 Ask questions of the audience and confirm meaning of information</p> <p>3.3 Maintain communication processes with others to assist flow of work activities</p> <p>3.4 Use site approved signalling methods to convey information</p> <p>3.5 Participate in discussion to obtain information and clarify meaning</p> <p>3.6 Communicate cooperatively and effectively with others</p>
4 Complete written documentation	<p>4.1 Complete written documentation clearly, concisely and on time</p> <p>4.2 Use approved documents</p> <p>4.3 Pass on written information to others</p>

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

## **Unit Mapping Information**

RIICOM201A Communicate in the workplace

## **Links**

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## Assessment Requirements for RIICOM201D Communicate in the workplace

### Modification History

Release	Comment
1	This unit replaces RIICOM201A Communicate in the workplace
2	Editorial corrections.
3	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

### Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of communicating in the work place that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - identifying communication strategies and systems
  - operating communications systems and equipment to convey meaning to others
  - communicating clearly and promptly to others to convey information and make meaning
  - listening carefully to instructions and information
  - participating in group discussions and engage with group members respectfully
  - asking questions to clarify meaning
  - communicating concisely both written and verbally
  - interpreting other communications such as flags, lights, signs, bells and whistles
  - identifying and reporting communication faults and deficiencies
  - using approved and preparing written documentation that communicates meaning to others

## Knowledge Evidence

The candidate must demonstrate knowledge of communicating in the workplace through:

- relevant standards and site procedures
- worksite communication system components, applications and limitations
- procedures and safety requirements of communication equipment and systems
- common faults in communication equipment/systems
- emergency communication procedures
- record maintenance

## Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment; and,
- simulation may be used for assessment of this Unit of Competency where it does not compromise the quality of assessment outcomes and provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills;
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current\* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years

Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

\*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

\*\*Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## RIIHAN301D Operate elevating work platform

### Modification History

Release	Comment
1	This unit replaces RIIHAN301B Operate elevating work platform
2	Editorial corrections; Amend reference to Licensing requirements in Unit Application
3	Required frequency and volume of evidence amended in Performance evidence.  Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

### Application

This unit describes a participant's skills and knowledge required to operate an elevating work platform in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories and Industry sectors. Relevant information must be sourced prior to application of the unit.

## Elements and Performance Criteria

1. Plan and prepare for operating an elevating work platform	<p>1.1 Access, interpret and apply elevating work platforms documentation and ensure the work activity is compliant</p> <p>1.2 Obtain, read, interpret, clarify and confirm work requirements</p> <p>1.3 Select and wear personal protective equipment appropriate for work activities</p> <p>1.4 Identify and select any required tools and equipment, check for serviceability and rectify or report, verbally or in writing, any faults prior to commencement</p> <p>1.5 Perform pre-start and post-start inspections/checks</p> <p>1.6 Coordinate activities with others prior to commencement of, and during, the work activity</p> <p>1.7 Identify and address potential risks, hazards and environmental issues, and implement control measures</p> <p>1.8 Obtain and interpret emergency procedures, and be prepared for fire/accident/emergency</p>
2. Conduct work activities from elevating work platform	<p>2.1 Stabilise elevating work platform</p> <p>2.2 Place tools and equipment into bucket/platform</p> <p>2.3 Use approved safety devices, ensure safety of personnel and surrounding site</p> <p>2.4 Act on or report, verbally or in writing, monitoring systems and alarms</p> <p>2.5 Recognise and respond to hazardous and emergency situations</p> <p>2.6 Complete work and shut-down in accordance with agreed work plan</p>
3. Carry out operator maintenance	<p>3.1 Carry out work platform inspections and fault finding</p> <p>3.2 Carry out routine operational servicing, lubrication and housekeeping tasks in accordance with manufacturer's instructions and site authorised procedures and practices</p> <p>3.3 Carry out minor operator maintenance to manufacturer's instructions and site requirements</p> <p>3.4 Process written records</p>
4. Clean up	<p>4.1 Clear work area and reuse, recycle or dispose of materials</p> <p>4.2 Check, clean, maintain and store plant, tools and equipment</p>

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

## Unit Mapping Information

RIIHAN301B Operate elevating work platform

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## Assessment Requirements for RIIHAN301D Operate elevating work platform

### Modification History

Release	Comment
1	This unit replaces RIIHAN301B Operate elevating work platform
2	Editorial corrections; Amend reference to Licensing requirements in Unit Application
3	<p>Required frequency and volume of evidence amended in Performance evidence.</p> <p>Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.</p>

## Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient completion of operating elevating work platforms including:
  - selecting and using the required plant, tools and equipment
  - planning and preparing for operating elevating work platforms
  - identifying, addressing and/or reporting, verbally or in writing monitoring systems and alarms
  - identifying and following procedures in emergency or hazardous situations
  - applying hand-eye coordination
- works effectively with others to undertake and complete the operation of elevating work platforms that meet all of the required outcomes including:
  - using a range of communication techniques and equipment to coordinate activities with others
  - maintaining written and verbal reporting requirements and procedures
- demonstrates completion of operating elevating work platforms that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - stabilising elevating work platform
  - selecting safety devices and correctly ensuring safety of personnel and surrounding site
  - completing work platform inspections and fault finding
  - completing operational servicing, lubrication and housekeeping tasks
  - disposing of environmentally sensitive oils, fluids and materials

## Knowledge Evidence

The candidate must demonstrate knowledge of the following when operating an elevating work platform:

- the appropriate National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- elevating work platform operational procedures
- basic geological and survey data related to elevating work platforms
- site environmental requirements and constraints related to elevating work platforms

## Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current\* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years

Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

\*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

\*\*Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## RIIQUA201D Maintain and monitor site quality standards

### Modification History

Release	Comment
1	This unit replaces RIIQUA201A Maintain and monitor site quality standards
2	Editorial corrections
3	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

## Application

This unit describes a participant's skills and knowledge required to maintain and monitor site quality standards in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

No licensing or certification requirements apply to this unit at the time of publication.

## Elements and Performance Criteria

1 Plan, prepare for quality work outcomes	<p>1.1 Access, interpret and apply quality standards and ensure the work activity is compliant</p> <p>1.2 Identify and agree on performance indicators for own work</p> <p>1.3 Plan and prepare for work to achieve quality standards</p> <p>1.4 Complete work within time, quality, cost and productivity parameters</p>
2 Apply quality systems to own work	<p>2.1 Carry out work to meet quality standards</p> <p>2.2 Adjust performance indicators to meet changing circumstances that affect quality standard requirements</p> <p>2.3 Suggest procedure improvements to others for continuous improvement quality standards</p> <p>2.4 Take corrective actions to improve work outcomes</p> <p>2.5 Complete quality documentation</p>
3 Monitor and report quality standards	<p>3.1 Monitor quality of outputs and identify non-compliance</p> <p>3.2 Prepare written records of quality outputs and report non-compliance</p> <p>3.3 Monitor work processes, report incidents apply local risk control processes to minimise quality non-compliance</p> <p>3.4 Communicate variation to quality outputs and standards to others</p>

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

## **Unit Mapping Information**

RIIQUA201A Maintain and monitor site quality standards

## **Links**

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## Assessment Requirements for RIIQUA201D Maintain and monitor site quality standards

### Modification History

Release	Comment
1	This unit replaces RIIQUA201A Maintain and monitor site quality standards
2	Editorial corrections
3	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

### Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant legislation, documentation, policies and procedures
- demonstrates completion of the monitoring and maintenance of site quality standards that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - organising work activities to comply with site quality standards
  - identifies and agrees on performance indicators
  - completes work within set parameters
  - recommends and communicates continuous improvements to quality standards
  - processes quality written documentation
  - monitors work processes, reports incidents and applies local risk processes

## Knowledge Evidence

The candidate must demonstrate knowledge of maintaining and monitoring site quality standards through:

- accessing, interpreting and applying the organisation and site requirements and procedures
- work healthy and safety
- maintaining the standards for site/enterprise quality systems and processes
- performing work planning processes
- technical and operational capability and limitations of resources and workplace equipment being used
- applying reporting procedures

## Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current\* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years

Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

\*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

\*\*Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## RIIRIS201D Conduct local risk control

### Modification History

Release	Comment
1	This unit replaces RIIRIS201B Conduct local risk control
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

### Application

This unit describes a participant's skills and knowledge required to conduct local risk control in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Elements and Performance Criteria

1 Plan and prepare for risk control	<p>1.1 Access, interpret and apply risk management documentation and ensure the work activity is compliant</p> <p>1.2 Inspect work area conditions to identify potential hazards</p> <p>1.3 Apply risk management procedures to deal with recognised hazards</p> <p>1.4 Recognise the type and scope of unresolved hazards and their likely impact</p>
2 Assess and identify unacceptable risk	<p>2.1 Assess and determine consequence of an event</p> <p>2.2 Consider and determine likelihood of the event</p> <p>2.3 Identify criteria for the acceptability/unacceptability of the risk</p> <p>2.4 Assess risk against criteria to identify if it warrants 'unacceptable risk' status and action</p> <p>2.5 Effectively communicate and clarify the decision to others</p>
3 Identify, assess and implement risk treatments	<p>3.1 Identify and consider all possible risk treatment options</p> <p>3.2 Identify options by preliminary analysis and consideration of options</p> <p>3.3 Analyse options, including resource requirements</p> <p>3.4 Select most appropriate and effective course of action</p> <p>3.5 Plan and prepare the course of action in detail and acquire/obtain required resources and approval</p> <p>3.6 Implement the approved risk treatment</p> <p>3.7 Review risk management processes</p>
4 Complete records and reports	<p>4.1 Effectively communicate accurate information to others on the course of action and implementation</p> <p>4.2 Complete written records and reports for hazards and actions from personal risk assessment</p>

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

## Unit Mapping Information

RIIRIS201B Conduct local risk control

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## Assessment Requirements for RIIRIS201D Conduct local risk control

### Modification History

Release	Comment
1	This unit replaces RIIRIS201B Conduct local risk control
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

### Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locate and apply relevant documentation, policies and procedures
- works effectively with others to undertake and complete conducting of local risk control including:
  - communicating clearly and concisely with others to receive and clarify treatment information
  - communicating clearly and concisely the likelihood and consequence of an identified risk
- demonstrates completion of conducting local risk control that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - identifying 'unacceptable risk' using the acceptability/unacceptability criteria
  - working with others to determine risk controls
  - assessing and determining consequence and likelihood of potential risk
  - controlling risk by selecting and implementing most appropriate treatment
  - reporting written information about risk assessment and treatment implementation

## Knowledge Evidence

The candidate must demonstrate knowledge in conducting local risk control through:

- accessing, interpreting and applying the organisation and site requirements and procedures for:
  - organisation risk management policy, procedure requirements
  - conducting worksite risk management procedures
  - conducting and maintaining worksite communication, reporting and recording procedures
- identifying and assessing hazards, risks, acceptability of risks and controls
- reading, preparing and using worksite safety systems information

## Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current\* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years

Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

\*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

\*\*Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## RIIWHS201D Work safely and follow WHS policies and procedures

### Modification History

Release	Comment
1	The unit replaces RIIOHS201A Work safely and follow OHS policies and procedures.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

### Application

This unit describes a participant's skills and knowledge required to work safely and follow WHS policies and procedures in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

*Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.*

## Elements and Performance Criteria

1. Access and apply site safety procedures	<p>1.1 Access, interpret and apply work health and safety procedures and ensure the work activity is compliant</p> <p>1.2 Carry out isolation of energy sources and immobilisation of potential energy sources</p> <p>1.3 Locate destinations by interpreting and applying site plans, transport rules and signage</p> <p>1.4 Identify, act on, and report breaches in site safety</p>
2. Apply personal safety measures	<p>2.1 Select and wear personal protective equipment</p> <p>2.2 Establish and maintain a clean and tidy safe working area</p> <p>2.3 Obtain permits and clearances before specialised work is carried out</p> <p>2.4 Apply safe manual handling procedures</p> <p>2.5 Identify and apply site procedures for conducting high-risk activities</p>
3. Apply operational safety measures	<p>3.1 Recognise and respond to alarms</p> <p>3.2 Identify and clarify responsibility in responding to emergency situations</p> <p>3.3 Apply basic fire fighting techniques</p> <p>3.4 Identify emergency escape route(s) and procedures</p>
4. Maintain personal wellbeing	<p>4.1 Identify risks to personal wellbeing and recognise preventative strategies</p> <p>4.2 Identify, act on, and report situations which may endanger others</p> <p>4.3 Access and explain verbally or in writing the requirements for fitness for duty</p> <p>4.4 Comply with all work health and safety policies including smoking, alcohol and drug use</p>
5. Identify and report incidents	<p>5.1 Recognise and communicate incident and injury statistics</p> <p>5.2 Report and prepare written records of incidents and injuries</p> <p>5.3 Contribute to and participate in incident investigations</p>

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

## Unit Mapping Information

RIIOHS201A Work safely and follow OHS policies and procedures

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## Assessment Requirements for RIIWHS201D Work safely and follow WHS policies and procedures

### Modification History

Release	Comment
1	The unit replaces RIIOHS201A Work safely and follow OHS policies and procedures.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

### Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of working safely and following WHS policies and procedures that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - sourcing, interpreting, clarifying and applying site safety information
  - listening carefully to health and safety instructions and information
  - responding to and clarifying information and directions
  - carrying out work instructions that complies with WHS policies and procedures
  - selecting, wearing and caring for personal protective equipment for all activities that require personal protective equipment
  - applying safe lifting and manual handling techniques
  - identify and report on WHS issues to appropriate personnel
  - recognising and following procedure to respond to alarms
  - completing workplace reporting procedures

## Knowledge Evidence

The candidate must possess knowledge of work safely and follow WHS policies and procedures through:

- determining equipment safety requirements
- identifying personal protective equipment
- follows hazardous substances procedures and handling techniques
- location of safety data sheets (SDS) information and their application
- adhering to isolation procedures
- identifying lifting techniques, including for both manual and automated lifting
- locating and complying with WHS procedures
- application of site safety requirements and procedures
- participating in procedures for workplace management of others (e.g. consultation, safety representatives, committees, dispute resolution)
- determining potential of biological effects (e.g. circadian rhythms, sleep, alertness, fatigue, stress, effects of heat stress and hypothermia)
- details of site drug and alcohol policy
- locating and using emergency equipment

## Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current\* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years

Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

\*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

\*\*Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## RIIWHS204D Work safely at heights

### Modification History

Release	Comments
1	This unit replaces RIIOHS204A Work safely at heights.
2	Formatting corrections.
3	Inserted Application information.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

## Application

This unit describes a participant's skills and knowledge required to work safely at heights in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles where they are required to perform work at heights.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

*Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.*

## Elements and Performance Criteria

1. Identify work requirements	<p>1.1 Access, interpret and apply height safety procedures and ensure the work activity is compliant</p> <p>1.2 Inspect site to determine layout and physical condition, condition of structures, prevailing weather conditions, equipment requirements and potential hazards</p> <p>1.3 Adhere to WHS requirements</p> <p>1.4 Identify, select and check safety equipment for serviceability</p> <p>1.5 Identify, manage and report potential risks and hazards</p>
2. Identify work procedures and instructions	<p>2.1 Consult with authorised personnel to select materials, tools and equipment and check for serviceability</p> <p>2.2 Select, wear and care for personal protective equipment</p> <p>2.3 Inspect/install fall protection and perimeter protection equipment</p> <p>2.4 Identify approved methods of moving tools and equipment to work area and minimise potential hazards associated with tools at heights</p> <p>2.5 Ensure safety system has been installed correctly</p> <p>2.6 Select and install appropriate signs and barricades</p>
3. Access and install equipment	<p>3.1 Consult with authorised personnel to ensure anchor fall protection and associated equipment is correctly fitted and adjusted</p> <p>3.2 Ensure all required equipment is installed</p> <p>3.3 Use recommended methods to access work area for people, tools and equipment</p>

	3.4 Locate tools and materials to eliminate or minimise the risk of items being knocked down
4. Perform work at heights	4.1 Check access from ground to work area and ensure it is safe 4.2 Keep fall equipment in place and adjusted appropriately for movement during work 4.3 Undertake manual handling of materials and equipment 4.4 Locate materials and equipment ensuring that they are safely secured and distributed 4.5 Check safety system periodically for compliance 4.6 Monitor risk control measures to ensure that they are effective and appropriate 4.7 Reassess risk control measures, as required, in accordance with changed work practices and/or site conditions and undertake alterations
5. Clean up work area	5.1 Consult with authorised personnel to ensure safety system is dismantled and removed 5.2 Clear work area and dispose of or recycle materials 5.3 Clean, check, maintain and store tools and equipment

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

## Unit Mapping Information

RIIOHS204A Working safely at heights

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

# Assessment Requirements for RIIWHS204D Work safely at heights

## Modification History

Release	Comments
1	This unit replaces RIIOHS204A Work safely at heights.
2	Formatting corrections.
3	Inserted Application information.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

## Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of working safely at heights that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - accessing, interpreting and applying technical and safety information for working at heights
  - assessing hazards and risk associated with working at heights and implement control methods
  - selecting wearing and caring for personal protective equipment
  - identifying required safety systems including fall protection and associated equipment
  - checking that fitting, adjusting and anchoring of fall protection and associated equipment is correct
  - performing work safely at heights

## Knowledge Evidence

The candidate must demonstrate knowledge of the following when working safely at heights:

- names and functions of equipment, components and materials
- complying with equipment manufacturer's instructions and specifications
- safe shifting and handling of tools and materials
- adhering to statutory and regulatory authority requirements
- the nature of work undertaken at heights
- complying with heights safety systems
- the processes of providing for safe working practices
- using safety equipment/systems and considerations to facilitate working safely at heights
- complying with safe work methods

## Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current\* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
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Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

\*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

\*\*Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

## Links

SkillsDMC RII Companion Volumes - <http://www.skillsdmc.com.au/>

## SIRXCCS201 Apply point-of-sale handling procedures

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release Date	Comments
First Release:	This is a revised unit, based on and equivalent to SIRXCCS001A Apply point-of-sale handling procedures.

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to operate point-of-sale equipment, apply store policy and procedures to a range of transactions, interact with customers, and package or wrap an item for transportation.

It covers demonstration of the ability to operate a range of point-of-sale equipment in order to complete sales, returns and exchange transactions, and process a number of methods of payment, according to store policies.

### Application of the Unit

This unit applies to frontline service personnel.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Operate point-of-sale equipment.	<p>1.1.Open and close point-of-sale terminal according to <b><i>store policy and procedures</i></b>.</p> <p>1.2.Clear point-of-sale terminal and transfer tender according to store procedure.</p> <p>1.3.Handle cash according to store security procedures.</p> <p>1.4.Maintain supplies of change in point-of-sale terminal according to store policy.</p> <p>1.5.Attend active point-of-sale terminals according to store policy.</p> <p>1.6.Complete records for transaction errors according to store policy.</p> <p>1.7.Maintain adequate supplies of dockets, vouchers and <b><i>point-of-sale documents</i></b>.</p> <p>1.8.Inform <b><i>customers</i></b> of delays in the point-of-sale operation where required.</p>
2. Ensure accuracy of transactions.	<p>2.1.Identify and perform <b><i>numerical calculations</i></b> to ensure accurate pricing and collection of money.</p> <p>2.2.Collect numerical information from various sources and calculate accurately with or without the use of a calculator.</p>
3. Perform point-of-sale transactions.	<p>3.1.Complete <b><i>point-of-sale transactions</i></b> according to store policy.</p> <p>3.2.Identify and apply store procedures in respect of cash and non cash transactions.</p> <p>3.3.Identify and apply store procedures in regard to exchanges and returns.</p> <p>3.4.Move goods through point-of-sale area efficiently and with attention to fragility and packaging.</p> <p>3.5.Enter information into <b><i>point-of-sale equipment</i></b>.</p> <p>3.6.State price or total and amount of cash received verbally to customer.</p> <p>3.7.Tender correct change.</p>

4. Complete sales.
  - 4.1. Complete customer order forms, invoices and receipts and process any loyalty card transactions.
  - 4.2. Identify and process customer delivery requirements according to set timeframes.
  - 4.3. Process sales transactions or direct customers to point-of-sale terminals according to store policy without undue delay.
  - 4.4. Acknowledge and thank customer in line with store policy and procedures.
5. Wrap and pack goods.
  - 5.1. Maintain and request adequate supplies of ***wrapping and packaging materials***.
  - 5.2. Select appropriate wrapping or packaging material.
  - 5.3. Wrap merchandise neatly and effectively where required.
  - 5.4. Pack items safely to avoid damage in transit, and attach labels where required.
  - 5.5. Arrange transfer of merchandise for parcel pick up or other ***delivery methods*** if required.

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- communication and interpersonal skills to:
  - ask questions to identify and confirm requirements
  - inform customers of delays
  - listen actively
  - request adequate supplies of wrapping material or bags through clear and direct communication
  - share information
  - state price or total and amount of cash received
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- self-management skills to:
  - deal with different types of transactions
  - follow set routines and procedures
- literacy and numeracy skills to:
  - document sales and delivery information
  - render change
  - undertake work functions, including addition, division, multiplication, percentages and subtraction

### Required knowledge

- cash and non-cash handling procedures, including:
  - balancing point-of-sale equipment
  - calculating non-cash documents
  - change required, denominations of change and tendering change
  - clearance of terminal and transference of tender
  - counting cash
  - maintenance of cash float
  - opening and closing point-of-sale terminal
  - recording takings
  - security of cash and non-cash transactions
- functions and procedures for operating point-of-sale equipment, including:
  - calculators
  - electronic scales
  - numerical display board
  - registers
- merchandise handling techniques, including wrapping and packaging techniques

- range of services provided by the store
- relevant legislation and statutory requirements, including:
  - industry codes of practice
  - work health and safety (WHS)
  - Australian consumer law
  - scanners
- store policy and procedures in relation to:
  - allocated duties and responsibilities
  - bag checking
  - customer service
  - exchanges and returns
  - handling, packing and wrapping goods or merchandise
  - point-of-sale transactions
- stock availability
- key features of a calculator

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- operates point-of-sale equipment according to manufacturer instructions and store policy and procedures
- applies store policy and procedures in regard to cash handling and point-of-sale transactions
- interprets, calculates and records numerical information accurately
- processes sales transaction information responsibly and accurately according to store policy and procedures
- applies store policy and procedures in regard to the handling, packing, wrapping and delivery of goods or merchandise.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a real or simulated retail work environment
- relevant documentation, such as:
  - stock, inventory and price lists
  - financial transaction dockets and slips
  - lay-by, credit and product return slips
  - store policy and procedures manuals
- a range of point-of-sale equipment.

### **Method of assessment**

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the work
- role play
- customer feedback
- answers to questions about specific skills and knowledge
- review of portfolios of evidence and third-party workplace reports of on-the-job performance.

### **Guidance information for assessment**

Holistic assessment with other units relevant to the industry sector, work and job role is recommended, for example:

- SIRXCCS202 Interact with customers
- SIRXFIN201 Balance and secure point-of-sale terminal
- SIRXINV001A Perform stock control procedures
- SIRXRSK201 Minimise loss.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the individual, accessibility of the item, and local industry and regional contexts) may also be included.

***Store policy and***

***procedures*** in regard to:

- cash handling
- financial transactions
- handling techniques of stock
- operation of point-of-sale equipment
- sales transactions
- security.

***Point-of-sale documents***

may include:

- credit slips
- lay-by slips
- message pads
- order forms
- product return slips
- promotional materials.

***Customers*** may include:

- customers with routine or special requests
- internal and external contacts
- new or repeat contacts
- people from a range of social, cultural and ethnic backgrounds
- people with varying physical and mental abilities.

***Numerical calculations***

may include:

- addition and subtraction
- calculations of cash amounts and change
- calculations of discount amounts
- estimation of quantities
- measurement
- multiplication and division
- percentages.

***Point-of-sale***

***transactions*** may include:

- cheques
- credit cards and store cards
- EFTPOS
- exchanges
- gift vouchers
- lay-by
- returns
- smart cards
- travellers cheques.

***Point-of-sale equipment***

- cash drawer
- cash register

may include:

- EFTPOS terminal
- electronic scales
- numerical display board
- scanner
- security tagging.

***Wrapping and  
packaging materials***  
may include:

- adhesive tape
- bags
- boxes
- bubble wrap
- gift wrapping
- paper
- ribbon
- string.

***Delivery methods*** may  
include:

- courier
- domestic or international delivery
- freight
- parcel pick-up
- post or express post.

## **Unit Sector(s)**

Cross-Sector

## **Competency Field**

Client and Customer Service

## SIRXCCS202 Interact with customers

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release Date	Comments
First Release:	This is a revised unit, based on and equivalent to SIRXCCS002A Interact with customers.

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to deliver service to customers. It involves being able to communicate effectively with customers, respond to their complaints, receive and process sales orders, and identify special customer requirements.

The unit covers the consistent application of store policies and industry codes of practice to provide a quality service environment by treating customers and team members in a courteous and professional manner through all stages of the service and sales procedure, and to identify and resolve customer complaints.

### Application of the Unit

This unit applies to frontline service personnel.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Deliver service to customers.	<p>1.1. <b><i>Communicate</i></b> with <b><i>customers</i></b> in a professional, courteous manner according to store policy.</p> <p>1.2. Meet <b><i>customer needs</i></b> and reasonable requests or refer to supervisor, according to store policy and <b><i>legislative requirements</i></b>.</p> <p>1.3. Record customer details and information where necessary.</p> <p>1.4. Identify and anticipate possible problems and take action to minimise the effect on customer satisfaction.</p> <p>1.5. Recognise and act upon opportunities to deliver additional levels of <b><i>service</i></b> beyond the customer's immediate request.</p> <p>1.6. Maintain contact with customer until sale is completed according to store policy.</p> <p>1.7. Use verbal and non-verbal communication to develop rapport with customers during service delivery.</p> <p>1.8. Encourage repeat customers by promotion of appropriate services or products according to store policy.</p> <p>1.9. Farewell customer appropriately and courteously according to store policy.</p>
2. Respond to customer complaints.	<p>2.1. Convey a positive, helpful attitude to customers when handling <b><i>complaints</i></b>, according to store policy.</p> <p>2.2. Handle complaints sensitively, courteously and with discretion.</p> <p>2.3. Establish and confirm with customer nature of complaint by active listening and questioning.</p> <p>2.4. Take action to resolve complaint to customer's satisfaction wherever possible.</p> <p>2.5. Promptly refer unresolved customer dissatisfaction or complaints to supervisor.</p> <p>2.6. Take the opportunity to turn incidents of customer dissatisfaction into a demonstration of high-quality service to customer according to store policy.</p> <p>2.7. Complete documentation regarding customer dissatisfaction</p>

- or complaints accurately and legibly.
- 2.8. Take ***follow-up action*** as necessary to ensure customer satisfaction.
3. Receive and process sales orders.
- 3.1. Record customer details and information accurately.
- 3.2. Promptly refer customers to appropriate area as required.
- 3.3. Provide customers with information in clear, concise manner.
- 3.4. Process, record and act upon sales orders according to store policy.
- 3.5. Process customer returns or refunds according to store policy and procedures.
4. Identify special customer requirements.
- 4.1. Promptly identify customers with special needs or requirements by observation and questioning.
- 4.2. Verbally and non-verbally convey a willingness to assist.
- 4.3. Promptly service, refer or redirect customers' needs as required.

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- communication and interpersonal skills to:
  - build rapport and understanding
  - clarify and feed back information
  - deal with difficult customers
  - listen to customers' needs
  - negotiate with and persuade customers to buy
  - promote products and services
  - respond to complaints effectively and politely
- literacy and numeracy skills to:
  - calculate costs and discounts
  - document sales, stock and delivery information
  - follow procedures for recording customer orders that are placed in person, by telephone or by electronic means
  - handle legal tender
  - take messages in person or by telephone
  - write records of complaints
  - weigh and measure goods
- observation and analysis skills to anticipate customer behaviour
- self-management skills to follow set routines and procedures

### Required knowledge

- add-on selling concepts
- conflict-resolution strategies
- functions and procedures for operating the store telephone system and other communication equipment, and the relevant numbers
- greeting and farewelling techniques
- location of store departments
- merchandise and service range of store departments
- non-verbal cues indicating customer behaviour
- questioning and active listening techniques
- relevant legislation and statutory requirements, including work health and safety (WHS)
- store policy and procedures in regard to:
  - customer service
  - dealing with customer complaints
  - allocated duties and responsibilities
  - customer returns and refunds

- lay-by, gift voucher and rain-check procedures
- strategies for handling difficult or abusive customers

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- accesses, records and processes sales orders accurately and responsibly, according to store policy and procedures
- identifies the nature of customer complaints, resolves complaints and provides service to customers according to store policies
- collaboratively works within a team to meet customers' needs
- applies store policy and procedures and industry codes of practice in regard to customer service
- provides a quality service environment by treating customers and team members in a courteous and professional manner through all stages of the service and sales procedure
- uses effective questioning, active listening and observation skills to identify special customer requirements.

### Context of and specific resources for assessment

Assessment must ensure access to:

- a real or simulated retail work environment
- relevant documentation, such as:
  - sales order forms
  - complaint and return forms
  - stock, inventory and price lists
  - store policy and procedures manuals
- a range of customers with different requirements
- point-of-sale equipment and materials
- a communication system or a range of communication equipment.

### Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- role play
- customer feedback
- answers to questions about specific skills and knowledge
- review of portfolios of evidence and third-party workplace reports of on-the-job performance.

### Guidance information

Holistic assessment with other units relevant to the industry

**for assessment**

sector, workplace and job role is recommended, for example:

- SIRXCCS201 Apply point-of-sale handling procedures
- SIRXFIN201 Balance and secure point-of-sale terminal
- SIRXINV001A Perform stock control procedures
- SIRXRSK201 Minimise loss.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the individual, accessibility of the item, and local industry and regional contexts) may also be included.

***Communication***

techniques may include:

- face-to-face or telephone contact with customers
- non-verbal communication
- speaking clearly and concisely
- using appropriate language
- using open and inclusive language.

***Customers*** may include:

- customers with routine or special requests
- internal and external contacts
- new or repeat contacts
- people from a range of social, cultural and ethnic backgrounds
- people with varying physical and mental abilities.

***Store policy*** may relate to:

- cash handling
- customer service
- dealing with customer complaints
- processing sales orders.

***Customer needs*** may include:

- information regarding store facilities and services
- location of specific items within the store
- product information
- returns or refunds.

***Legislative requirements*** may include:

- liquor licensing regulations
- lottery legislation
- sale of second-hand goods
- sale of X and R-rated products
- tobacco laws
- Trade Practices Act
- trading hours
- transport, storage and handling of goods.

***Service*** may include:

- all store activities
- internal and external customers
- follow-up in event of delays in service provision.

***Complaints*** may relate to:

- prices
- products
- service.

***Follow-up action*** may require:

- communication with:
  - customers

- staff
- supervisors and management
- suppliers
- recommendations to supervisor regarding policy and procedure development or alteration.

## **Unit Sector(s)**

Cross-Sector

## **Competency Field**

Client and Customer Service

## SIRXFIN201 Balance and secure point-of-sale terminal

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release	Comments
First Release	This is a revised unit, based on and equivalent to SIRXFIN001A Balance point-of-sale terminal.

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to balance and reconcile a register or terminal in a retail environment. It involves clearing the register, counting money, calculating non-cash transactions, and reconciling and recording takings. The unit requires the application of store policy and procedures in undertaking those tasks.

### Application of the Unit

This unit applies to frontline retail staff working under some supervision.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Balance and secure takings from register or terminal.	<ul style="list-style-type: none"><li>1.1.Perform <b><i>register or terminal</i></b> balance at designated times according to <b><i>store policy and procedures</i></b>.</li><li>1.2.Separate cash float from takings prior to balancing procedure and secure according to store policy.</li><li>1.3.Supply change to register or terminal according to store policy.</li><li>1.4.Obtain and interpret register or terminal reading or print-out.</li><li>1.5.Secure cash and <b><i>non cash documents</i></b> according to store security policy and procedures.</li></ul>
2. Reconcile takings.	<ul style="list-style-type: none"><li>2.1.Count cash accurately.</li><li>2.2.Calculate non cash documents accurately.</li><li>2.3.Determine balance between register or terminal reading and sum of cash and non cash transactions.</li><li>2.4.Report discrepancies between register or terminal reading and sum of cash and non cash transactions to <b><i>relevant personnel</i></b> according to store policy.</li><li>2.5.Record store and individual department takings and file <b><i>records</i></b> according to store policy.</li></ul>

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- literacy and numeracy skills to:
  - balance the register or terminal
  - count cash
  - calculate non-cash transactions
  - calculate discrepancies between reported and actual takings
  - complete documentation
  - interpret documentation
  - report on takings
- planning and organising skills to complete tasks in a set timeframe
- technology skills to operate register or terminal

### Required knowledge

- cash and non-cash handling procedures, including:
  - balancing point-of-sale terminal
  - calculating non-cash documents
  - change required and denominations of change
  - clearance of terminal and transference of tender
  - counting cash
  - credit and returns
  - credit cards
  - EFTPOS
  - gift vouchers
  - lay-by
  - maintenance of cash float
  - opening and closing point-of-sale terminal
  - recording takings
  - security of cash and non-cash transactions
- store policy and procedures in regard to:
  - cash float
  - operation of equipment used at register or terminal
  - register or terminal balance
  - security of cash and non-cash transactions

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- operates register or terminal equipment according to manufacturer instructions and store policy
- applies store policy and procedures in regard to handling cash and removing takings from register or terminal
- applies store policy and procedures in regard to cash float
- applies store policy and procedures in regard to reading registers and recording information
- processes documentation and records responsibly and according to store policy and procedures
- reconciles takings according to store policy and procedures.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a real or simulated retail work environment
- relevant documentation, such as:
  - financial transaction dockets, slips and invoices
  - sample debit card and credit card vouchers
  - recording and tally sheets
  - store policy and procedure manuals in regard to register or terminal balance
- register or terminal and related equipment.

### **Method of assessment**

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- role play
- written or verbal questioning to assess knowledge and understanding
- review of portfolios of evidence and third-party workplace reports of on-the-job performance.

### **Guidance information for assessment**

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- SIRXCCS201 Apply point-of-sale handling procedures
- SIRXRSK201 Minimise loss.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the individual, accessibility of the item, and local industry and regional contexts) may also be included.

- |   |   |
|---|---|
| <b><i>Register or terminal</i></b> may be:              | <ul style="list-style-type: none"> <li>• cleared at intervals during or at close of trading</li> <li>• cleared by operator or specialist staff</li> <li>• electronic</li> <li>• manual.</li> </ul>  |
| <b><i>Store policy and procedures</i></b> in regard to: | <ul style="list-style-type: none"> <li>• cash handling</li> <li>• register or terminal balance</li> <li>• security.</li> </ul>  |
| <b><i>Non-cash documents</i></b> may relate to:         | <ul style="list-style-type: none"> <li>• cash on delivery (COD)</li> <li>• cheques</li> <li>• credit cards</li> <li>• customer credit ratings</li> <li>• customer refunds</li> <li>• gift vouchers</li> <li>• hire-purchase</li> <li>• lay-by.</li> </ul> |
| <b><i>Relevant personnel</i></b> may include:           | <ul style="list-style-type: none"> <li>• manager</li> <li>• supervisor</li> <li>• team leader.</li> </ul>   |
| <b><i>Records</i></b> may be:                           | <ul style="list-style-type: none"> <li>• electronic</li> <li>• manual.</li> </ul>   |

## Unit Sector(s)

Cross-Sector

## Competency Field

Finance

## SIRXICT001A Operate retail technology

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release	Comments
Second Release	Editorial updates

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to operate a variety of retail equipment. It involves identifying the correct equipment required for a given task, maintaining retail equipment, applying keyboard skills and operating data entry equipment.

### Application of the Unit

This unit applies to frontline service personnel who operate and maintain a range of retail equipment, including point-of-sale systems, keyboards and data entry equipment, according to manufacturer instructions, design specifications, store policy and designated timeframes. This work is undertaken with some supervision and guidance.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Maintain retail equipment.	1.1. Identify purpose of <b><i>equipment</i></b> used in store or department. 1.2. Operate equipment, according to design specifications and <b><i>safety requirements</i></b> . 1.3. Identify equipment faults and report to <b><i>relevant personnel</i></b> . 1.4. Identify and apply maintenance program for retail equipment according to <b><i>store policy and procedures</i></b> .
2. Apply keyboard skills.	2.1. Operate keyboard using typing techniques within designated speed and accuracy requirements. 2.2. Enter and edit information accurately.
3. Operate data entry equipment.	3.1. Enter data using relevant equipment, according to store policy and procedures. 3.2. Operate price marking equipment, according to manufacturer instructions and store policy. 3.3. Enter data accurately and within designated time limits.

## **Required Skills and Knowledge**

This section describes the essential skills and knowledge and their level, required for this unit.

### **Required skills**

- planning and organising skills to complete tasks in set timeframe
- problem solving skills to deal with different types of transactions
- literacy and numeracy skills to:
  - read store procedures for operating equipment
  - enter data
  - perform point-of-sale transactions
  - follow common fault-finding procedures

### **Required knowledge**

- store policy and procedures in regard to:
  - the operation and maintenance of store retail equipment
  - reporting problems and faults
- relevant legislation and statutory requirements in regard to operating retail technology, including Work Health and Safety (WHS) requirements
- relevant industry codes of practice
- purpose and impact of using electronic technology
- licensing requirements for carrying and moving merchandise (if applicable)

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- operates a range of store retail equipment according to store policy and procedures and industry codes of practice
- operates and maintains a range of store retail equipment according to manufacturer instructions and design specifications
- applies store maintenance program and reports faults and problems
- consistently applies safe working practices in the operation and maintenance of store retail equipment according to OHS legislation and codes of practice
- reads and interprets operation manuals to solve routine faults and errors and maintains and uses equipment effectively
- uses keyboard skills to enter and edit data accurately
- completes tasks in set timeframe.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a real or simulated work environment
- relevant documentation, such as:
  - store policy and procedure manuals
  - manufacturer instructions and operation manuals
- a range of store retail equipment.

### **Methods of assessment**

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- a role play
- third-party reports from a supervisor
- customer feedback
- answers to questions about specific skills and knowledge
- review of portfolios of evidence and third-party workplace reports of on-the-job performance.

### **Guidance information for assessment**

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below.

***Equipment*** may include:

- point-of-sale terminals
- electronic bar coding equipment for price labelling and stocktaking
- portable data entry
- printers
- EFTPOS terminals
- electronic ordering equipment
- wrapping and packing equipment
- equipment for carrying or moving merchandise
- equipment for storage of merchandise, including refrigerators
- weighing machines
- thermometers
- security tag systems
- trolley return equipment
- computers
- scanners
- numerical keyboard equipment, including calculators.

***Safety requirements*** may include:

- hazard identification (e.g. workplace inspections)
- emergency, fire and accident procedures
- personal safety procedures
- stress management
- procedures for the use of personal protective clothing and equipment
- reporting incidents and accidents in the workplace.

***Relevant personnel*** may include:

- supervisor
- team leader
- manager.

***Store policy and procedures*** in regard to:

- store administration
- clerical systems
- operating and maintaining retail equipment
- Work Health and Safety (WHS).

## **Unit Sector(s)**

Cross-Sector

## **Competency field**

Computer Operations and ICT Management

## SIRXINV001A Perform stock control procedures

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release	Comments
Second Release	Editorial updates

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to handle stock in a retail environment. It involves receiving and processing incoming goods, rotating stock and dispatching goods.

### Application of the Unit

This unit applies to team members who handle and move stock, to ensure efficient stock control within the retail environment. Team members are required to receive and process incoming goods, dispatch outgoing goods, rotate stock and maintain stock levels, assist with stocktaking, and report problems or discrepancies in stock to relevant personnel according to store policy and relevant legislation, whilst using safe working practices.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Receive and process incoming goods.	<p>1.1.Maintain cleanliness and orderliness in receiving bay according to <b><i>store policy and procedures</i></b>.</p> <p>1.2.Unpack goods using correct <b><i>handling techniques</i></b> and <b><i>equipment</i></b>, according to store policy.</p> <p>1.3.Remove and promptly dispose of packing materials, according to store policy and relevant <b><i>legislative requirements</i></b>.</p> <p>1.4.Check incoming stock and validate against purchase orders and delivery documentation, according to store policy and relevant legislative requirements.</p> <p>1.5.Inspect items received for damage, quality, use by dates, breakage or discrepancies and record, according to store policy.</p> <p>1.6.Record stock levels on store <b><i>stock systems</i></b>, according to store policy.</p> <p>1.7.Rotate and store stock, according to the first in first out (FIFO) principle.</p> <p>1.8.Dispatch stock to appropriate area or department.</p> <p>1.9.Apply stock price and code labels when required according to store policy.</p>
2. Rotate stock.	<p>2.1.Carry out stock rotation procedures, according to store routine and policy.</p> <p>2.2.Perform store code checking and reporting procedures, including recording of waste and markdowns.</p> <p>2.3.Place merchandise to achieve a balanced, fully stocked display appearance and promote sales.</p> <p>2.4.Place excess stock in storage or dispose of, according to store policy and legislative requirements.</p> <p>2.5.Maintain safe lifting, shifting and carrying techniques according to store Work Health and Safety (WHS) policy and legislative requirements.</p>

## **Required Skills and Knowledge**

This section describes the essential skills and knowledge and their level, required for this unit.

### **Required skills**

- literacy and numeracy skills to:
  - follow set routines and procedures
  - use electronic labelling and ticketing equipment
  - stock records and delivery documentation
  - report problems

### **Required knowledge**

- store policy and procedures in regard to:
  - stock control
  - store labelling policy
  - product quality standards
  - correct unpacking of goods
  - out-of-date, missing or damaged stock
  - equipment used
  - stock location
  - waste disposal
  - methods of storage
  - delivery documentation
  - stock record documentation
  - dispatch documentation
  - reporting faults and problems
- relevant legislation and statutory requirements in regard to stock control, including WHS
- relevant industry codes of practice

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- consistently applies store policy and procedures, industry codes of practice, relevant legislation and statutory requirements in regard to stock control
- consistently applies safe working practices in the manual handling and moving of stock according to WHS legislation and store policy
- interprets and applies manufacturer instructions with regard to handling stock and using relevant equipment
- receives and processes incoming goods and dispatches outgoing goods according to store policy and procedures
- rotates stock and performs out-of-code checking and reporting according to store policy and procedures
- interprets and processes information accurately and responsibly.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a retail work environment
- relevant equipment, including:
  - stock moving equipment
  - manual and electronic labelling and ticketing equipment
- computers and stock recording equipment
- relevant documentation, such as:
  - invoices, packing slips, dispatch documents and order forms
  - recording and tally sheets
  - store policy and procedures manuals
  - WHS regulations
  - relevant legislation and statutory requirements
  - industry codes of practice.

### **Methods of assessment**

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- third-party reports from a supervisor
- written or verbal questioning to assess knowledge and

	<ul style="list-style-type: none"> <li>• understanding</li> <li>• review of portfolios of evidence and third-party workplace reports of on-the-job performance.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• SIRXCCS001A Apply point-of-sale handling procedures</li> <li>• SIRXRSK001A Minimise theft</li> <li>• SIRXCCS002A Interact with customers</li> <li>• SIRXFIN001A Balance point-of-sale terminal.</li> </ul>

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below.

<b><i>Store policy and procedures</i></b> may relate to:	<ul style="list-style-type: none"> <li>• stock control</li> <li>• reception and dispatch</li> <li>• WHS</li> <li>• food safety.</li> </ul>
<b><i>Handling techniques</i></b> may vary according to:	<ul style="list-style-type: none"> <li>• stock characteristics</li> <li>• industry codes of practice</li> <li>• legislative requirements.</li> </ul>
<b><i>Equipment</i></b> may include:	<ul style="list-style-type: none"> <li>• electronic bar coding equipment</li> <li>• weighing machines</li> <li>• thermometers</li> <li>• trolley return equipment</li> <li>• portable data entry</li> <li>• cutting equipment</li> <li>• protective clothing.</li> </ul>
<b><i>Legislative requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• WHS</li> <li>• hazardous substances and dangerous goods</li> <li>• labelling of workplace substances</li> <li>• waste removal and environmental protection</li> <li>• transport, storage and handling of goods.</li> </ul>
<b><i>Stock systems</i></b> may be:	<ul style="list-style-type: none"> <li>• manual</li> <li>• electronic.</li> </ul>

## **Unit Sector(s)**

Cross-Sector

## **Competency field**

Inventory

## SIRXINV002A Maintain and order stock

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release	Comments
Second Release	Editorial updates

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to maintain and order stock in a retail environment. It involves monitoring receipt and dispatch of goods, maintaining stock records, coordinating stocktake, identifying stock losses, processing orders and following up on orders.

### Application of the Unit

This unit applies to retail staff who are responsible for monitoring and coordinating stock levels, storage, distribution and reorder cycles. It includes rostering staff, organising and coordinating stocktakes, maintaining accurate records and routinely reporting on inventory status to relevant personnel according to store policy and procedures.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Monitor receipt and dispatch of goods.	<p>1.1. Delegate responsibility for receipt and dispatch of goods to <b><i>appropriate staff</i></b>.</p> <p>1.2. Implement store procedures in regard to receipt, dispatch and secure storage of goods.</p> <p>1.3. Observe <b><i>staff</i></b> functions to ensure store procedures are followed and documentation is completed correctly.</p> <p>1.4. Implement store procedures to ensure goods inspected for quantity and quality on receipt.</p> <p>1.5. Act upon variations to quantity and quality of delivered goods, according to <b><i>store policy and procedures</i></b>.</p> <p>1.6. Supervise safe <b><i>handling and storage of goods</i></b>, according to store policy.</p>
2. Maintain stock records.	<p>2.1. Monitor and maintain stock levels at required levels.</p> <p>2.2. Maintain, monitor and adjust stock reorder cycles as required.</p> <p>2.3. Inform team members of their individual responsibilities in regard to recording of stock.</p> <p>2.4. Maintain stock storage and movement <b><i>records</i></b>, according to store policy.</p> <p>2.5. Record stock discrepancies and follow procedures according to store policy.</p> <p>2.6. Monitor stock performance and identify and <b><i>report</i></b> fast and slow selling items according to store policy.</p>
3. Coordinate stocktake or cyclical count.	<p>3.1. Interpret policy and procedures in regard to <b><i>stocktaking</i></b> and cyclical counts and explain to team members.</p> <p>3.2. <b><i>Roster</i></b> staff, according to allocated budget and time constraints.</p> <p>3.3. Allocate stocktaking tasks to individual team members.</p> <p>3.4. Provide team members with clear directions for the performance of each task.</p> <p>3.5. Allocate team members to ensure effective use of staff resources to complete task.</p> <p>3.6. Produce accurate reports on stocktake data, including discrepancies, for management.</p>

- 4. Identify stock losses.
  - 4.1. Identify, record and assess losses against potential loss forecast on a regular basis.
  - 4.2. Identify avoidable losses and establish reasons.
  - 4.3. Recommend and implement possible solutions.
- 5. Process orders.
  - 5.1. Process and raise orders for stock as requested, according to store policy and procedures.
  - 5.2. Maintain *ordering and recording system*.
  - 5.3. Ensure availability of sample range, according to buying plan.
  - 5.4. Order pricing materials as required.
  - 5.5. Record negotiated purchase and supply agreements and file for retrieval.
- 6. Follow up orders.
  - 6.1. Monitor delivery process to meet agreed deadlines.
  - 6.2. Handle routine supply problems or refer to management as required by store policy.
  - 6.3. Maintain ongoing liaison with buyers, store or departments, warehouse and *suppliers* to ensure continuity of supply.
  - 6.4. Distribute stock, according to store or department allocation.

## Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

### Required skills

- technical skills to:
  - use store stocktaking systems
  - use electronic recording equipment
- interpersonal skills to:
  - inform team members of their responsibilities and give instructions
  - explain policies and procedures to staff
  - allocate tasks and provide directions for performance of tasks
  - liaise with buyers, store and departments, warehouse and suppliers through clear and direct communication
  - ask questions to identify and confirm requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- management skills to coordinate stock takes
- negotiation skills to handle supply problems
- literacy and numeracy skills to:
  - prepare and present stock control reports and documentation
  - process orders
  - maintain delivery and supply records
  - maintain stock distribution records
  - maintain stock ordering and recording systems

### Required knowledge

- store policy and procedures in regard to:
  - stock control
  - store merchandising system
  - current and future stock levels
  - bar codes, labels and price tags
  - store stock recording system
  - stock replenishment and reorder procedures
  - inter- and intra-store and department transfers
  - reporting of stock discrepancies and damage
  - identifying and recording stock losses
  - identifying and recording discrepancies
  - existing suppliers
  - quality control procedures and requirements
  - receipt and dispatch of goods, including inspection for quality and quantity

- relevant licensing requirements for moving stock mechanically
- relevant legislation and statutory requirements
- relevant industry codes of practice
- relevant Work Health and Safety (WHS) legislation and codes of practice

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- consistently implements and monitors store policy and procedures regarding receipt, dispatch and secure storage of goods
- regularly monitors staff implementation of store procedures and documentation in regard to receipt, dispatch and secure storage of goods
- monitors stock levels, storage, movement and reorder cycles on a regular basis.
- organises and coordinates stocktake according to store policy and procedures
- consistently raises and processes stock orders and maintains record system according to store policy and procedures
- monitors delivery processes and distributes stock to ensure continuity of supply.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a retail work environment
- relevant documentation, such as:
  - store policy and procedures for receipt and dispatch of goods
  - store procedures for stocktake
  - WHS legislation and codes of practice
  - industry codes of practice
  - legislation and statutory requirements
  - store merchandising and marketing policy and procedures
  - inter- and intra-store and department transfer procedures
  - store quality control procedures and requirements.

### **Methods of assessment**

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- third-party reports from a supervisor
- written or verbal questioning to assess knowledge and understanding

- review of portfolios of evidence and third-party workplace reports of on-the-job performance.

**Guidance information for  
assessment**

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below.

- Appropriate staff*** may include:
- frontline staff
  - relevant managers
  - supervisor
  - team leader
  - specialist staff.
- Staff*** may include:
- full-time, part-time, casual or contract staff
  - people from a range of social, cultural and ethnic backgrounds
  - people with varying degrees of language and literacy levels.
- Store policy and procedures*** in regard to:
- stock control
  - stock control system
  - recording procedures
  - procedures for investigating discrepancies
  - store merchandise and marketing
  - pricing, labelling and packaging requirements
  - quality control policy and procedures.
- Handling and storage of goods*** may vary according to:
- stock characteristics
  - industry codes of practice.
- Records*** may be:
- manual
  - digital.
- Reports*** for management may include:
- financial reports
  - business documents
  - informal reports
  - stocktake reports.
- Stocktaking*** may be:
- cyclical
  - compliance driven.
- Roster*** may include:
- varying levels of staff training
  - staffing levels
  - routine or busy trading conditions
  - full-time, part-time or casual staff
  - range of staff responsibilities.
- Ordering and recording system*** may be:
- manual
  - digital.
- Suppliers*** may include:
- existing contacts
  - new contacts

- local suppliers
- overseas supplies.

## **Unit Sector(s)**

Cross-Sector

## **Competency field**

Inventory

## SIRXMER201 Merchandise products

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release	Comments
First Release	This is a revised unit, based on and equivalent to SIRXMER001A Merchandise products.

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to merchandise products within a retail store. It involves the consistent application of store policies and procedures in regard to displaying, merchandising, ticketing, labelling, pricing and storing stock. It also includes the application of correct manual handling, storage and display techniques according to stock characteristics, industry codes of practice, and relevant legislation.

### Application of the Unit

This unit applies to frontline retail personnel.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Place and arrange merchandise.	<p>1.1.Unpack <b><i>merchandise</i></b> according to <b><i>store policy and procedures</i></b> and <b><i>legislative requirements</i></b>.</p> <p>1.2.Place merchandise on floor, fixtures and shelves in determined locations according to work health and safety (WHS) legislative requirements.</p> <p>1.3.<b><i>Display</i></b> merchandise to achieve a balanced, fully-stocked appearance and promote sales.</p> <p>1.4.Identify damaged, soiled or out-of-date stock and take corrective action as required according to store procedures.</p> <p>1.5.Place stock range in line with fixtures, ticketing, prices and bar codes.</p> <p>1.6.Rotate stock according to stock requirements and store procedure.</p> <p>1.7.Ensure stock presentation conforms to special <b><i>handling techniques</i></b> and other <b><i>safety requirements</i></b>.</p>
2. Prepare and apply labels and tickets.	<p>2.1.Prepare <b><i>labels and tickets</i></b> for window, wall or floor displays according to store policy.</p> <p>2.2.Prepare tickets using electronic equipment or neatly by hand according to design specifications and store procedures.</p> <p>2.3.Identify soiled, damaged, illegible or incorrect labels and tickets and take corrective action according to store procedures.</p> <p>2.4.Use, maintain and store electronic ticketing and labelling equipment according to manufacturer's instructions and store procedures.</p> <p>2.5.Place labels and tickets visibly and correctly on merchandise.</p> <p>2.6.Replace labels and tickets according to store policy.</p>
3. Maintain displays.	<p>3.1.Reset or dismantle unsuitable or out-of-date displays and <b><i>special promotion areas</i></b> as directed.</p> <p>3.2.Assist supervisor in selection of merchandise for display.</p> <p>3.3.Arrange and face up merchandise as directed and according to layout specifications and load-bearing capacity of fixtures.</p> <p>3.4.Maintain correct pricing and information on merchandise according to store procedures, industry codes of practice and</p>

- legislative requirements.
- 3.5. Identify optimum stock levels and replenish stock according to store policy.
- 3.6. Remove excess packaging and maintain display areas in a clean and tidy condition.
- 4. Protect merchandise.
  - 4.1. Identify and apply correct handling, storage and display techniques according to stock characteristics and legislative requirements.

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- literacy and numeracy skills to:
  - prepare machine or manual labels and tickets
  - read and interpret store procedures and guidelines
  - read and interpret manufacturer instructions
- self-management skills to complete tasks in a set timeframe
- technology skills to operate and maintain manual and electronic labelling and ticketing equipment

### Required knowledge

- store policies and procedures in regard to:
  - availability and use of display materials
  - correct storage of stock
  - correct storage procedures for labelling and ticketing equipment and materials
  - location of display areas
  - merchandise range
  - merchandising, ticketing and pricing of stock
  - scheduling for building or rotating displays
  - stock replenishment
  - stock rotation
  - store promotional themes, including advertising, catalogues and special offers
- correct manual handling techniques for protection of self and merchandise
- principles of display
- elements and principles of design and trends in retail design
- relevant WHS regulations, including:
  - manual handling
  - hygiene and sanitation
  - hazardous substances
  - labelling of workplace substances
- relevant legislation and statutory requirements relating to merchandising product
- pricing procedures, including inclusion and exclusion of GST
- relevant industry codes of practice relating to merchandising product

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- applies store policies and procedures and legislative requirements in regard to displaying, merchandising, ticketing, pricing and storing stock
- displays merchandise on floor, fixtures, shelves and display areas, in determined locations, according to special manual handling techniques and other safety requirements
- prepares display labels and price tickets for merchandise with regard to store policies and procedures
- operates, maintains and stores a range of ticketing equipment according to:
  - store policy and procedures
  - industry codes of practice
  - manufacturer instructions and design specifications
- identifies damaged, soiled or out-of-date stock and takes corrective action as required by store procedures and legislative requirements
- maintains display areas and replenishes stock as required according to store procedures and legislative requirements
- performs correct manual handling, storage and display techniques.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a real or simulated retail work environment
- a range of ticketing and pricing equipment
- merchandise for display
- display materials and props
- cleaning materials
- relevant documentation, such as:
  - store policy and procedure manuals on housekeeping, merchandising and WHS
  - manufacturer instructions and operation manuals for electronic ticketing equipment
  - relevant legislation and industry codes of practice.

**Method of assessment**

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- customer feedback
- answers to questions about specific skills and knowledge
- review of portfolios of evidence and third-party workplace reports of on-the-job performance.

**Guidance information for assessment**

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- SIRXSLS201 Sell products and services
- SIRXSLS002A Advise on products and services.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the individual, accessibility of the item, and local industry and regional contexts) may also be included.

- Merchandise*** may be characterised by:
- type
  - brand
  - size
  - customer needs
  - colour
  - price.
- Store policy and procedures*** in regard to:
- merchandising of stock
  - preparing and displaying labels and tickets
  - maintaining displays.
- Legislative requirements*** may include:
- pricing requirements, including GST requirements
  - industry codes of practice
  - discounted items
  - Australian Consumer law.
- Display*** may include:
- setting new displays
  - maintaining existing displays.
- Handling techniques*** may vary according to:
- stock characteristics
  - store policy
  - legislative requirements
  - industry codes of practice.
- Safety requirements*** may relate to:
- transport, storage and handling of goods
  - hazardous substances
  - labelling of workplace substances.
- Preparation of ***labels and tickets*** may involve:
- pricing gun
  - shelf tickets
  - shelf talkers
  - written labels
  - swing ticketing
  - bar coding
  - price boards
  - header boards.
- Special promotion areas*** may be:
- permanent or temporary
  - interior or exterior
  - publicly accessible
  - windows

- shelves
- wall fixtures
- on floor.

## **Unit Sector(s)**

Cross-Sector

## **Competency Field**

Merchandising

## SIRXMER303 Coordinate merchandise presentation

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release	Comments
First Release	This is a revised unit, based on and equivalent to SIRXMER002A Coordinate merchandise presentation.

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to apply knowledge of store merchandising and pricing policy and standards to support and coordinate relevant frontline staff members and ensure that they arrange, present and label or price merchandise according to store requirements.

It also involves informing staff of store merchandise presentation requirements for sales, promotions and special events, and providing feedback to management in regard to improvement of store marketing and promotional activities.

### Application of the Unit

This unit applies to frontline visual merchandisers who supervise sales and other staff implementing and maintaining displays according to store merchandising standards.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Instruct and coordinate staff.	1.1.Communicate and demonstrate store <b><i>display standards and requirements</i></b> to staff. 1.2.Identify occurrence and timing of promotions and special events and inform staff. 1.3.Identify items to be advertised or promoted, according to store merchandising policy and inform staff. 1.4.Identify appropriate timing for dismantling and disposing of displays and inform staff.
2. Supervise construction and maintenance of presentations.	2.1.Plan and coordinate promotions and special events as directed by management. 2.2.Plan and supervise construction and maintenance of <b><i>displays</i></b> in order to achieve balance and visual impact. 2.3.Ensure product or service <b><i>display information</i></b> accurately depicts product or service being promoted. 2.4.Ensure displays are completed according to required time schedule, with minimum disruption to <b><i>customer</i></b> service and traffic flow. 2.5.Ensure displays are constructed and maintained in a safe and secure manner. 2.6.Regularly monitor replenishment of merchandise and rotation of stock on store displays and take action as required.
3. Implement merchandise pricing.	3.1.Implement store policy and procedures in regard to pricing and ticketing. 3.2.Identify current prices for products and services and amend according to store policy. 3.3.Inform team members of price changes and current pricing policies.
4. Review merchandise presentations.	4.1.Evaluate promotions or special events against sales turnover and store presentation standards. 4.2.Evaluate merchandise presentation against sales turnover and store presentation standards. 4.3.Provide management with feedback in regard to improvement of

store marketing and promotional activities.

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- communication and interpersonal skills to:
  - give instructions
  - provide feedback to management through clear and direct communication
  - provide information to staff
  - share information
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- literacy and numeracy skills to:
  - prepare machine or manual labels and tickets
  - present and price merchandise
  - read and interpret store policies and procedures
- observation skills to assess display and presentation compliance with visual merchandising standards
- technology skills to operate and maintain electronic labelling and ticketing equipment
- team leadership skills to:
  - instruct and support staff
  - supervise staff activities

### Required knowledge

- availability and use of materials
- correct storage procedures for labelling and ticketing equipment and materials
- load-bearing capacity of fixtures and display areas
- location of display areas
- manufacturer specifications for the use of electronic labelling and ticketing equipment
- occurrence and timing of store promotions, including advertising, catalogues and special offers
- pricing procedures, including GST requirements
- principles and techniques of interpersonal communication skills
- principles of display and design
- procedure for accessing information and implementing price changes
- relevant industry codes of practice relating to coordinating merchandise presentation
- relevant legislation and statutory requirements relating to coordinating merchandise presentation, including Australian Consumer Law
- relevant work health and safety (WHS) legislation and codes of practice
- store policies and procedures in regard to:
  - efficient use of resources
  - merchandise range

- merchandising, pricing and ticketing
- minimum stock levels required
- stock rotation and replenishment
- storage of stock
- store promotional themes

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- implements and instructs staff regarding store display, merchandising, ticketing and pricing policies and procedures
- coordinates and monitors display, promotion and presentation of merchandise according to store policies and procedures and legislative requirements
- identifies products to be advertised or promoted according to store merchandising policies
- coordinates construction and maintenance of displays within time schedule set in regard to advertising, catalogues, special offers and in-store promotions in a safe and secure manner
- informs staff of pricing policies, promotions, special events, display standards and requirements, and timing for dismantling and disposing of displays
- evaluates and reports effectiveness of store merchandising and promotional activities to management and staff as required by store policies and procedures.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a real or simulated retail work environment
- pricing and ticketing equipment
- merchandise for display
- display materials and props
- relevant documentation, such as:
  - store policy and procedures manuals on merchandising
  - WHS requirements
  - manufacturer instructions and operation manuals on electronic ticketing equipment
  - legislation and statutory requirements
  - industry codes of practice
  - a work team.

### **Method of assessment**

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- third-party reports from a supervisor
- customer feedback
- answers to questions about specific skills and knowledge.

**Guidance information for assessment** Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the individual, accessibility of the item, and local industry and regional contexts) may also be included.

- Display standards and requirements*** may include:
- maintaining existing displays
  - safety
  - setting up new displays
  - ticketing and display signage.
- Staff*** may be:
- from a range of social, cultural and ethnic backgrounds
  - from within or outside own work team
  - full-time, part-time, casual or contract.
- Displays*** may be located in a variety of areas, including:
- fixtures on floor
  - interior or exterior
  - permanent or temporary
  - publicly accessible areas
  - shelves
  - walls
  - windows.
- Display information*** may include:
- discount information
  - price
  - product brand
  - special guarantees
  - product characteristics, such as:
    - size
    - weight capacity
    - materials.
- Customers*** may include:
- internal and external contacts
  - new or repeat contacts
  - people from a range of social, cultural and ethnic backgrounds
  - people with varying physical and mental abilities.

## **Unit Sector(s)**

Cross-Sector

## **Competency Field**

Merchandising

## **SIRXRSK001A Minimise theft**

### **Modification History**

Not applicable.

### **Unit Descriptor**

**Unit descriptor**

This unit describes the performance outcomes, skills and knowledge required to minimise theft in a retail environment. It involves applying routine store security, taking appropriate action to minimise theft and maintaining security of cash, registers or terminals and keys.

### **Application of the Unit**

**Application of the unit**

This unit applies to frontline service personnel. It requires the team member to apply store policy and procedures and industry codes of practice in regard to store security and theft prevention, reporting theft or suspicious behaviour to relevant personnel and monitoring stock, work areas, customers and staff to minimise opportunities for theft.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

**Prerequisite units**

Nil

## Employability Skills Information

**Employability skills** The required outcomes described in this unit contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit is packaged will assist in identifying employability skills requirements.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency. Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Apply routine store security.	<p>1.1 Apply store <b><i>security systems and procedures</i></b> according to store policy.</p> <p>1.2 Handle and secure cash according to <b><i>store policy and procedures</i></b>.</p> <p>1.3 Observe and deal with suspect behaviour by <b><i>customers</i></b> according to store policy and <b><i>legislative requirements</i></b>.</p> <p>1.4 Deal with internal and external theft according to store policy and legislative requirements.</p> <p>1.5 Store products and equipment in a secure manner.</p>
2 Minimise theft.	<p>2.1 Take appropriate action to minimise theft by applying store procedures and legislative requirements.</p> <p>2.2 Match merchandise to correct price tags.</p> <p>2.3 Maintain surveillance of merchandise according to store policy and <b><i>legislative requirements</i></b>.</p>

**ELEMENT**

**PERFORMANCE CRITERIA**

- 2.4 Check customers' bags as required at point of sale according to store policy and legislative requirements.
- 2.5 Maintain security of cash, cash register and keys according to store policy.
- 2.6 Maintain security of stock, cash and equipment in regard to customers, *staff* and outside contractors according to store policy and legislative requirements.
- 2.7 Deal with suspected or potential thieves according to store policy and procedures.

## **Required Skills and Knowledge**

### **REQUIRED SKILLS AND KNOWLEDGE**

This section describes the essential skills and knowledge and their level, required for this unit.

The following skills must be assessed as part of this unit:

- literacy and numeracy skills in:
  - recording of stolen items
  - reporting of theft.

The following knowledge must be assessed as part of this unit:

- store policy and procedures in regard to:
  - security
  - checking customers' bags and purchases
  - reporting problems and faults
- relevant legislation and statutory requirements, particularly in regard to checking customers' bags and purchases
- Trade Practices and Fair Trading Acts
- store merchandising system
- security procedures relating to cash and non-cash transactions
- location and operation of store security equipment
- reporting procedures for internal and external theft or suspicious circumstances.

## **Evidence Guide**

### **EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

## EVIDENCE GUIDE

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- consistently applies store policy and procedures and legislative requirements, including industry codes of practice in regard to store security and theft prevention in a range of contexts and situations
- consistently applies store policy and procedures in regard to following security procedures and for reporting theft or suspicious behaviour to relevant personnel
- monitors stock, work area, customers and staff to minimise opportunities for theft.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a real or simulated work environment
- relevant documentation, such as:
  - store policy and procedures manuals
  - legislation and statutory regulations
  - industry codes of practice
  - Trade Practices and Fair Trading Acts
- relevant security equipment
- point-of-sale equipment.

## EVIDENCE GUIDE

### Methods of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- a simulated work environment
- third-party reports from a supervisor
- customer feedback
- answers to questions about specific skills and knowledge
- review of portfolios of evidence and third-party workplace reports of on-the-job performance.

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- SIRXCCS001A Apply point-of-sale handling procedures
- SIRXCCS002A Interact with customers
- SIRXINV001A Perform stock control procedures
- SIRXFIN001A Balance point-of-sale terminal.

### Assessing employability skills

Employability skills are integral to effective performance in the workplace and are broadly consistent across industry sectors. How these skills are applied varies between occupations and qualifications due to the different work functions and contexts.

Employability skills embedded in this unit should be assessed holistically in the context of the job role and with other relevant units that make up the skill set or qualification.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below.

## RANGE STATEMENT

*Security systems and procedures*  
may deal with:

- customers
- staff
- keys
- visitors, sales representatives, contractors and vendors
- stock
- records
- cash, credit cards
- equipment, including:
  - alarm systems
  - video surveillance
  - mirrors
  - security tags
- locked and secure areas
- premises
- armed hold-up.

*Store policy and procedures*  
may relate to:

- security
- surveillance of merchandise
- reporting problems and faults.

*Customers* may include:

- people from a range of social, cultural and ethnic backgrounds and with varying physical and mental abilities.

*Legislative requirements* may  
include:

- privacy and confidentiality laws
- Trade Practices and Fair Trading Acts
- consumer law
- awards and agreements
- property offences
- credit laws
- reporting procedures
- criminal law.

## **RANGE STATEMENT**

*Staff* may include:

- management
- other staff members
- full-time, part-time and casual staff
- people from a range of social, cultural and ethnic backgrounds and with varying physical and mental abilities.

## **Unit Sector(s)**

**Sector**

Cross-Sector

## **Competency field**

**Competency field**

Risk Management and Security

## SIRXWHS302 Maintain store safety

### Modification History

The version details of this endorsed unit are in the table below. The latest information is at the top.

Release	Comments
First Release	This is a revised unit, based on and equivalent to SIRXOHS002A Maintain store safety.

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to maintain store safety in a retail environment.

It involves informing and involving team members with regard to work health and safety (WHS), monitoring and maintaining a safe work environment, implementing emergency procedures, identifying the need for WHS training, and maintaining WHS records. It is based on the National Occupational Health and Safety Commission (NOHSC) guidelines.

### Application of the Unit

This unit applies to store managers and team leaders.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Nil

### Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

### Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Inform team members about WHS matters.	<p>1.1. Clearly and accurately explain store policy and procedures in regard to WHS and <b><i>emergency procedures to team members</i></b>.</p> <p>1.2. Ensure access for team members to store <b><i>WHS policy and procedures</i></b>.</p> <p>1.3. Clearly and accurately explain relevant provisions of WHS legislation and codes of practice to team members.</p> <p>1.4. Regularly provide clear and accurate information on identified <b><i>hazards</i></b> and risk control procedures to team members.</p> <p>1.5. Model the implementation of WHS and emergency procedures to reinforce information.</p>
2. Involve team members in WHS matters.	<p>2.1. Provide <b><i>opportunities and processes for team members to consult and contribute</i></b> on WHS issues according to store policy.</p> <p>2.2. Promptly resolve issues raised or refer to relevant personnel according to store policy.</p> <p>2.3. Promptly convey outcomes of issues raised on WHS matters to team members.</p>
3. Monitor and maintain a safe work environment.	<p>3.1. Implement store policy and procedures with regard to identifying, preventing and reporting potential hazards.</p> <p>3.2. Take prompt action to deal with hazardous events according to store policy.</p> <p>3.3. Investigate unsafe or hazardous events, identify cause, and report inadequacies in risk control measures or <b><i>resource allocation</i></b> for risk control to <b><i>relevant personnel</i></b>.</p> <p>3.4. Implement and monitor control measures to prevent recurrence and minimise risks of unsafe and hazardous events according to store policy and <b><i>hierarchy of control</i></b>.</p> <p>3.5. Handle and store <b><i>hazardous goods</i></b> according to store policy and WHS regulations.</p> <p>3.6. Maintain <b><i>equipment</i></b> according to store policy and WHS regulations.</p> <p>3.7. Monitor team performance to ensure use of <b><i>safe manual handling techniques</i></b>.</p>

- 3.8. Implement *store emergency policy and procedures* promptly in the event of an emergency.
- 4. Identify need for WHS training.
  - 4.1. Identify WHS training needs, specifying gaps between WHS competencies required and those held by team members.
  - 4.2. Organise and arrange *training* according to store policy.
- 5. Maintain WHS records.
  - 5.1. Complete and maintain WHS *records* regarding occupational injury and disease according to store policy and *legislative requirements*.
  - 5.2. Use information from records to identify hazards and monitor risk control procedures according to store policy.

## Required Skills and Knowledge

this section describes the skills and knowledge required for this unit.

### Required skills

- communication and interpersonal skills to:
  - provide information, coaching and feedback to team members
  - involve team members
  - refer issues to appropriate personnel through clear and direct communication
  - motivate and lead a team
  - use and interpret non-verbal communication
- literacy and numeracy skills to:
  - generate reports
  - interpret and apply WHS regulations
  - interpret symbols used for WHS signage
  - read store policy and procedures
- technical skills to:
  - identify broken or damaged equipment
  - identify hazardous goods and substances
  - locate and use safety alarms, fire extinguishers and emergency exits

### Required knowledge

- hierarchy of risk control:
  - elimination of hazards
  - engineering controls to reduce risk
  - administrative controls
  - use of personal protective equipment
- job role and responsibilities
- location of nearest first aid assistant or facility
- manual handling and safe lifting techniques
- possible fire and safety hazards
- principles and techniques in interpersonal communication
- relevant WHS legislation and codes of practice
- sickness and accident procedures
- store policies and procedures in regard to:
  - manual handling
  - WHS emergency procedures
  - unsafe or hazardous goods
  - handling and storage
  - disposal
  - bomb threat procedures

- store evacuation

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- applies and monitors store policy, industry codes of practice, relevant legislation and statutory requirements in regard to WHS and emergency procedures
- applies and monitors safe work practices in the handling and moving of stock, according to WHS legislation and codes of practice
- interprets and monitors the implementation of manufacturer instructions with regard to handling stock and using relevant equipment
- applies and monitors safe work practices in the handling, storage and disposal of unsafe or hazardous materials
- identifies WHS training needs and maintains WHS records.

### **Context of and specific resources for assessment**

Assessment must ensure access to:

- a retail work environment
- relevant equipment, such as:
  - stock moving equipment
  - alarm systems
  - first aid equipment
  - firefighting equipment
  - communication equipment
- relevant documentation, such as:
  - WHS legislation
  - store evacuation procedures
  - store policy and procedures manuals
  - incident reporting forms.

### **Method of assessment**

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of performance in the workplace
- role play
- third-party reports from a supervisor
- customer feedback
- written or verbal questioning to assess knowledge and understanding.

### **Guidance information**

Holistic assessment with other units relevant to the industry

**for assessment**

sector, workplace and job role is recommended, for example:

- SIRXRSK002A Maintain store security.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the individual, accessibility of the item, and local industry and regional contexts) may also be included.

***Emergency procedures***  
may relate to:

- accidents
- bomb threats
- cyclones
- dealing with dangerous customers
- fire
- flooding
- product recall and contamination
- sickness
- store evacuation involving staff or customers.

***Team members*** may  
include:

- full-time, part-time, casual or contract
- new or existing staff
- people from a range of cultural, social and ethnic backgrounds
- people with varying levels of language and literacy.

***WHS policy and procedures*** may relate  
to:

- basic safety procedures
- customers
- dangerous goods
- emergency procedures
- equipment and tools
- issue-resolution procedures
- premises
- reporting procedures
- safe manual handling and lifting
- staff
- stock.

***Hazards*** may include:

- broken or damaged equipment
- chemical spills
- damaged packing material or containers
- electricity and water
- fires
- manual handling
- sharp cutting tools and instruments
- stress
- unguarded equipment.

***Opportunities and processes for team***

- identification of health and safety representatives
- WHS meetings

- members to consult and contribute*** may include:
- staff meetings
  - suggestions from staff for improving existing tasks and procedures.
- Resource allocation*** may include:
- equipment and technology
  - finances
  - materials
  - people
  - time.
- Relevant personnel*** may include:
- manager
  - safety representative
  - supervisor
  - team leader.
- Hierarchy of control*** may include:
- appropriate use of personal protective clothing and equipment
  - eliminating hazards
  - isolating hazards
  - substitution
  - using administrative controls
  - using engineering controls.
- Hazardous goods*** may include:
- chemicals
  - electrical equipment
  - flammable goods
  - waste.
- Equipment*** may include:
- computers
  - EFTPOS terminals
  - equipment for carrying or moving merchandise
  - equipment for storage of merchandise, including refrigerators
  - point of sale terminals
  - printers
  - security tag systems
  - thermometers
  - trolley return equipment
  - weighing machines
  - wrapping and packing equipment, such as shrink wrapping.
- Safe manual handling techniques*** may include:
- job procedures
  - lifting or shifting practices
  - using equipment, such as ladders and trolleys.
- Store emergency policy and procedures*** may relate to:
- alarm systems and procedures
  - events likely to endanger staff, contractors, customers or visitors
  - firefighting procedures
  - medical attention procedures
  - product recall and contamination
  - store evacuation procedures for staff and customers

- Training*** may include:
- transport arrangements for sick or injured persons.
  - emergency procedures
  - evacuation procedures
  - first aid
  - manual handling techniques
  - reporting procedures
  - stress management.
- Records*** may include:
- centralised
  - departmental
  - electronic
  - manual.
- Legislative requirements*** may include:
- federal, state or territory and local legislation
  - WHS regulations
  - privacy legislation
  - workers' compensation regulations.

## **Unit Sector(s)**

Cross-Sector

## **Competency Field**

Work Health and Safety

## SITXADM004A Plan and manage meetings

### Modification History

Not applicable.

### Unit Descriptor

#### Unit descriptor

This unit describes the performance outcomes, skills and knowledge required to plan and conduct structured meetings involving multiple participants. It requires the ability to write and distribute agendas, chair meetings and write minutes.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Application of the Unit

#### Application of the unit

This unit describes a complex administrative function for the tourism and hospitality industries and applies to the full range of industry sectors and environments.

The meetings described by this unit are formal in nature and would follow general meeting protocols. Meetings may be convened for a number of reasons in the tourism and hospitality industries. They may be formal board, committee or annual general meetings or meetings requiring a lesser degree of formality, such as project meetings or event management meetings.

Senior tourism and hospitality supervisors and managers who operate autonomously and have responsibility for others are involved in the planning and management of meetings.

## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Prerequisite units Nil

## Employability Skills Information

**Employability skills** The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit is packaged will assist in identifying employability skills requirements.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency. Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan and prepare for meetings.	<p>1.1 Identify the need for <b><i>meetings</i></b> and who should attend.</p> <p>1.2 Decide on style of meeting and required level of formality according to meeting purpose, occasion, nature of participants and organisation procedures.</p> <p>1.3 Make arrangements for meeting according to</p>

ELEMENT	PERFORMANCE CRITERIA
	organisational requirements and within designated timelines, including provision for people with special needs.
	1.4 Develop an agenda that reflects meeting purpose.
	1.5 Research or obtain information on agenda items to enable informed discussion at the meeting.
	1.6 Prepare meeting papers and dispatch to participants before the meeting, where appropriate, and within appropriate timeframes.
2 Conduct meetings.	2.1 Chair meetings according to organisation procedures and meeting protocols.
	2.2 Encourage open and constructive communication by using appropriate interpersonal and communication styles.
	2.3 Reach agreement with meeting participants on meeting goals and conduct.
	2.4 Present information and ideas clearly and concisely.
	2.5 Give all participants the opportunity to contribute.
	2.6 Manage meetings to maintain focus on agreed goals.
	2.7 Conduct meetings within agreed times, or adjust times with the agreement of participants.
	2.8 Record minutes of meetings where appropriate.
3 Debrief and follow up meetings.	3.1 Process and distribute <i>documentation from meetings</i> .
	3.2 Inform colleagues regarding the outcomes of meetings.
	3.3 Incorporate work resulting from meetings into the current work schedule, with tasks prioritised and actioned as appropriate.

## **Required Skills and Knowledge**

### **REQUIRED SKILLS AND KNOWLEDGE**

This section describes the essential skills and knowledge and their level, required for this unit.

The following skills must be assessed as part of this unit:

- meeting management and chairing skills, including:
  - active listening
  - questioning
  - conflict management
  - time keeping
- oral communication skills specific to the conduct of meetings, including presentation skills
- written communication skills specific to writing agendas, supporting notes and minutes
- summarising and minute taking.

The following knowledge must be assessed as part of this unit:

- different types and formats of meetings, including general awareness of procedures for formal meetings
- standard procedures for formal meetings, including:
  - agenda format and order
  - types of seating arrangements
  - meeting terminology
  - minutes
  - role of chairperson and other office bearers
- group dynamics.

## **Evidence Guide**

### **EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

## EVIDENCE GUIDE

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Evidence of the following is essential:

- project or work activities that show the candidate's ability to plan for and conduct effective and structured meetings using appropriate procedures, protocols and documentation
- ability to use effective communication skills in the conduct of meetings.

### **Context of and specific resources for assessment**

Assessment must ensure:

- management of a meeting in a meeting facility appropriate to size and style of meeting
- involvement of multiple meeting participants
- use of agendas, minutes and other supporting documentation relevant to subject matter of the meeting.

### **Methods of assessment**

A range of assessment methods should be used to assess the practical skills and knowledge required to plan and manage meetings. The following examples are appropriate for this unit:

- direct observation of a meeting chaired by the candidate
- review of agendas, minutes and supporting documentation prepared by the candidate
- review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate.

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- SITXCOM003A Deal with conflict situations
- SITXHRM005A Lead and manage people
- SITXMGT002A Develop and implement operational plans
- SITXMGT003A Manage projects.

## EVIDENCE GUIDE

### Assessing employability skills

Employability skills are integral to effective performance in the workplace and are broadly consistent across industry sectors. How these skills are applied varies between occupations and qualifications due to the different work functions and contexts.

Employability skills embedded in this unit should be assessed holistically with other relevant units that make up the skill set or qualification and in the context of the job role.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the performance criteria is detailed below.

***Meetings*** may include:

- one-off
- regular
- teleconferences
- videoconferences
- committee meetings
- board meetings
- annual general meetings
- project management meetings
- formal staff meetings.

***Documentation from meetings*** must include:

- agendas
- minutes.

## **Unit Sector(s)**

**Sector**

Cross-Sector

## **Competency field**

**Competency field**

Administration

## TAEDEL301A Provide work skill instruction

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	This unit describes the performance outcomes, skills and knowledge required to conduct individual and group instruction and demonstrate work skills, using existing learning resources in a safe and comfortable learning environment. The unit covers the skills and knowledge required to determine the success of both the training provided and one's own personal training performance. It emphasises the training as being driven by the work process and context.
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### Application of the Unit

<b>Application of the unit</b>	This unit supports a wide range of applications across any workplace setting and so can be used by any organisation. Its use is not restricted to training organisations.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise instruction and demonstration	1.1. Gather information about <i>learner characteristics</i> and learning needs 1.2. Confirm a <i>safe learning environment</i> 1.3. Gather and check <i>instruction and demonstration objectives</i> and seek assistance if required 1.4. Access and review relevant <i>learning resources</i> and <i>learning materials</i> for suitability and relevance, and seek assistance to interpret the contextual application 1.5. Organise access to necessary equipment or physical resources required for instruction and demonstration 1.6. Notify learners of <i>details</i> regarding the implementation of the learning program and/or delivery plan
2. Conduct instruction and demonstration	2.1. Use interpersonal skills with learners to establish a safe and comfortable learning environment 2.2. Follow the learning program and/or delivery plan to cover all learning objectives 2.3. Brief learners on any <i>OHS procedures</i> and requirements prior to and during training 2.4. Use <i>delivery techniques</i> to structure, pace and enhance learning 2.5. Apply <i>coaching</i> techniques to assist learning 2.6. Use communication skills to provide information, instruct learners and demonstrate relevant work skills 2.7. Provide opportunities for practice during instruction and through work activities 2.8. Provide and discuss feedback on learner performance to support learning
3. Check training performance	3.1. Use <i>measures</i> to ensure learners are acquiring and can use new technical and generic skills and knowledge 3.2. Monitor learner progress and outcomes in consultation with learner 3.3. Review relationship between the trainer/coach and the learner and adjust to suit learner needs
4. Review personal training performance and finalise documentation	4.1. Reflect upon personal performance in providing instruction and demonstration, and document strategies for improvement 4.2. Maintain, store and secure learner records according

ELEMENT	PERFORMANCE CRITERIA
	to organisational and legal requirements

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- verbal and non-verbal communication techniques, such as:
  - asking relevant and appropriate questions
  - providing explanations
  - demonstrating
  - using listening skills
  - providing information clearly
- safety skills to implement OHS requirements, by acting and responding safely in order to:
  - identify hazards
  - conduct prestart-up checks if required
  - observe and interpret learner behaviour that may put people at risk
- time-management, skills to:
  - ensure all learning objectives are covered
  - pace learning
- reflection skills in order to:
  - identify areas for improvement
  - maintain personal skill development
- literacy skills to:
  - complete and maintain documentation
  - read and follow learning programs and plans
  - read and analyse learner information
- technology skills to operate audio-visual and technical equipment
- interpersonal skills to:
  - engage, motivate and connect with learners
  - provide constructive feedback
  - maintain appropriate relationships
  - establish trust
  - use appropriate body language
  - maintain humour
  - demonstrate tolerance
  - manage a group
  - recognise and be sensitive to individual difference and diversity
- observation skills to:
  - monitor learner acquisition of new skills, knowledge and competency

**REQUIRED SKILLS AND KNOWLEDGE**

requirements

- assess learner communication and skills in interacting with others
- identify learner concerns
- recognise learner readiness to take on new skills and tasks

**Required knowledge**

- learner characteristics and needs
- content and requirements of the relevant learning program and/or delivery plan
- sources and availability of relevant learning resources and learning materials
- content of learning resources and learning materials
- training techniques that enhance learning and when to use them
- introductory knowledge of learning principles and learning styles
- key OHS issues in the learning environment, including:
  - roles and responsibilities of key personnel
  - responsibilities of learners
  - relevant policies and procedures, including hazard identification, risk assessment, reporting requirements, safe use of equipment and emergency procedures
  - risk controls for the specific learning environment

## Evidence Guide

### EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

Assessment must address the scope of this unit and reflect all components of the unit. A range of appropriate assessment methods and evidence-gathering techniques must be used to determine competency. A judgement of competency should only be made when the assessor is confident that the required outcomes of the unit have been achieved and that consistent performance has been demonstrated.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the ability to:

- carry out a minimum of three training sessions, involving demonstrating and instructing particular work skills for different groups; with each session addressing:
  - different learning objectives
  - a range of techniques and effective communication skills appropriate to the audience.

#### Context of and specific resources for assessment

Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided.

#### Method of assessment

#### Guidance information for assessment

For further information about assessment of this and other TAE units, refer to relevant implementation guidance published on the IBSA website ([www.ibsa.org.au](http://www.ibsa.org.au)).

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Learner characteristics</i></b> may include:	<ul style="list-style-type: none"> <li>• language, literacy and numeracy levels</li> <li>• learning styles</li> <li>• past learning and work experiences</li> <li>• specific needs</li> <li>• workplace culture.</li> </ul>
<b><i>Safe learning environment</i></b> may include:	<ul style="list-style-type: none"> <li>• exit requirements</li> <li>• personal protective equipment</li> <li>• safe access</li> <li>• safe use of equipment.</li> </ul>
<b><i>Instruction and demonstration objectives</i></b> may include:	<ul style="list-style-type: none"> <li>• competencies to be achieved</li> <li>• generic and technical skills, which may be:               <ul style="list-style-type: none"> <li>• provided by the organisation</li> <li>• developed by a colleague</li> <li>• individual or group objectives</li> <li>• learning outcomes.</li> </ul> </li> </ul>
<b><i>Learning resources</i></b> may include:	<ul style="list-style-type: none"> <li>• any material used to support learning, such as:               <ul style="list-style-type: none"> <li>• learner and user guides</li> <li>• trainer and facilitator guides</li> <li>• example training programs</li> <li>• specific case studies</li> <li>• professional development materials</li> <li>• assessment materials</li> </ul> </li> <li>• a variety of formats</li> <li>• those produced locally</li> <li>• those acquired from other sources.</li> </ul>
<b><i>Learning materials</i></b> may include:	<ul style="list-style-type: none"> <li>• handouts for learners</li> <li>• materials sourced from the workplace, e.g. workplace documentation, operating procedures, and specifications.</li> </ul>
<b><i>Details</i></b> may include:	<ul style="list-style-type: none"> <li>• location and time</li> <li>• outcomes of instruction or demonstration</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• reason for instruction or demonstration</li> <li>• who will be attending instruction session.</li> </ul>
<i>OHS procedures</i> may include:	<ul style="list-style-type: none"> <li>• emergency procedures</li> <li>• hazards and their means of control</li> <li>• incident reporting</li> <li>• use of personal protective equipment</li> <li>• safe work practices</li> <li>• safety briefings</li> <li>• site-specific safety rules.</li> </ul>
<i>Delivery techniques</i> may include:	<ul style="list-style-type: none"> <li>• coaching</li> <li>• demonstration</li> <li>• explanation</li> <li>• group or pair work</li> <li>• providing opportunities to practise skills and solve problems</li> <li>• questions and answers.</li> </ul>
<i>Coaching</i> may include:	<ul style="list-style-type: none"> <li>• learning arrangements requiring immediate interaction and feedback</li> <li>• on-the-job instruction and 'buddy' systems</li> <li>• relationships targeting enhanced performance</li> <li>• short-term learning arrangements</li> <li>• working on a one-to-one basis.</li> </ul>
<i>Measures</i> may include:	<ul style="list-style-type: none"> <li>• informal review or discussion</li> <li>• learner survey</li> <li>• on-the-job observation</li> <li>• review of peer coaching arrangements.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Delivery and facilitation
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## Competency field

<b>Competency field</b>	
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## Co-requisite units

Co-requisite units		

## TAEDEL404A Mentor in the workplace

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	This unit describes the performance outcomes, skills and knowledge required to establish and develop a professional mentoring relationship with a learner, in particular an apprentice or trainee employed by, or undertaking work placement in, a workplace. It includes establishing the need for mentoring, developing a mentoring plan/framework, facilitating and monitoring the mentoring relationship, and evaluating the effectiveness of mentoring.
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### Application of the Unit

<b>Application of the unit</b>	This unit typically applies to workplace supervisors or other work colleague with responsibility for mentoring in the workplace.
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### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop a mentoring plan	1.1. Identify scope and boundaries of the <b>mentoring</b> relationship according to organisational procedures 1.2. Establish <b>ground rules</b> and negotiate realistic expectations 1.3. Establish and maintain confidentiality of the relationship in accordance with <b>legislation, policy and procedures</b>
2. Facilitate mentoring relationship	2.1. Develop learner's confidence, self-esteem, respect and trust in the mentoring relationship 2.2. Share personal experiences and knowledge with the person being mentored according to agreed objectives 2.3. Support the person being mentored to develop and use skills in problem solving and decision making 2.4. Use personal and professional networks to assist the person being mentored 2.5. Provide information, guidance and constructive guidance to enhance engagement in the workplace 2.6. Use <b>techniques for resolving differences</b> without damaging the relationship, and obtain assistance according to organisational policy and procedures
3. Monitor mentoring relationship	3.1. Provide planning assistance and guidance as requested by the person being mentored in a form and style to suit their requirements 3.2. Provide feedback to the person being mentored on progress towards achieving the expectations and goals of the mentoring process 3.3. Recognise and discuss changes in the <b>mentoring relationship</b> with appropriate <b>stakeholders</b> 3.4. Negotiate and manage closure of the mentoring arrangement once objectives have been met
4. Evaluate effectiveness of mentoring	4.1. Establish and discuss <b>benefits</b> gained from the mentoring process 4.2. Reflect on and articulate the personal benefits gained from providing mentoring 4.3. Identify and report the outcomes of the mentoring arrangement and the <b>benefits to the organisation</b> according to organisational policy and procedures to improve the mentoring system or program

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- planning and time-management skills to mentor in a workplace
- oral communication and language skills to motivate learners
- organisational skills to provide guidance and feedback to individuals
- interpersonal skills to:
  - engage in relationship building, including building trust and maintaining confidentiality
  - respond to diversity, including gender and disability
- communication skills to use a range of communication strategies, including listening, questioning, and giving and receiving feedback
- initiative and enterprise skills to apply procedures relating to OHS and environmental legislation in the context of workplace mentoring

#### Required knowledge

- relevant policy, legislation, codes of practice and national standards likely to impact on the provision of workplace mentoring
- training contracts and responsibilities of employer, registered training organisation (RTO) and funding body
- training plans and responsibilities
- training products and strategies for learning
- mentoring methodologies and strategies
- acceptable behaviour in the mentoring relationship
- equal employment opportunity, equity and diversity principles
- OHS relating to the work role, including:
  - hazards relating to the industry and specific workplace
  - reporting requirements for hazards and incidents
  - specific procedures for work tasks
  - safe use and maintenance of relevant equipment
  - emergency procedures
  - sources of OHS information

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
<b>Overview of assessment</b>	Assessment must address the scope of this unit and reflect all components of the unit. A range of appropriate assessment methods and evidence-gathering techniques must be used to determine competency. A judgement of competency should only be made when the assessor is confident that the required outcomes of the unit have been achieved and that consistent performance has been demonstrated.
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• prepare a mentoring plan between the mentor and learner that reflects the scope and substance expected within a plan prepared for a learner undertaking a contracted apprenticeship or traineeship</li> <li>• facilitate at least three mentoring sessions</li> <li>• provide information on sessions, including comments and notes from both mentor and learner.</li> </ul>
<b>Context of and specific resources for assessment</b>	Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided.
<b>Method of assessment</b>	
<b>Guidance information for assessment</b>	For further information about assessment of this and other TAE units, refer to relevant implementation guidance published on the IBSA website ( <a href="http://www.ibsa.org.au">www.ibsa.org.au</a> ).

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Mentoring</i></b> may include:	<ul style="list-style-type: none"> <li>• long-term focus on personal growth and learning</li> <li>• wide range of learning oriented to:               <ul style="list-style-type: none"> <li>• support</li> <li>• guidance in personal or career growth</li> </ul> </li> <li>• relationship, not just a procedure or activity</li> <li>• one person professionally assisting the career development of another.</li> </ul>
<b><i>Ground rules</i></b> may include:	<ul style="list-style-type: none"> <li>• training for mentoring partners</li> <li>• mentoring agreement</li> <li>• active involvement of both partners in the mentoring process.</li> </ul>
<b><i>Legislation, policy and procedures</i></b> may include:	<ul style="list-style-type: none"> <li>• commonwealth and state or territory legislation and regulations, such as:               <ul style="list-style-type: none"> <li>• privacy legislation</li> <li>• equal employment opportunity, anti-discrimination and harassment legislation</li> <li>• OHS legislation</li> <li>• user choice</li> </ul> </li> <li>• organisational policy, procedures and protocols.</li> </ul>
<b><i>Techniques for resolving differences</i></b> may include:	<ul style="list-style-type: none"> <li>• finding a mutually beneficial solution</li> <li>• self-disclosure</li> <li>• inviting discussion</li> <li>• providing explanations</li> <li>• accessing assistance.</li> </ul>
<b><i>Mentoring relationship</i></b> may include:	<ul style="list-style-type: none"> <li>• informal workplace development program</li> <li>• formal mentoring process associated with a contracted apprenticeship or traineeship, involving a formal training plan.</li> </ul>
<b><i>Stakeholders</i></b> may include:	<ul style="list-style-type: none"> <li>• trainee or apprentice</li> <li>• manager or supervisor</li> <li>• RTO</li> <li>• learning support services, including assistive technology</li> </ul>

<b>RANGE STATEMENT</b>	
	and diagnostic testing <ul style="list-style-type: none"> <li>• funding organisation</li> <li>• supplier of learning resources.</li> </ul>
<b>Benefits</b> may include:	<ul style="list-style-type: none"> <li>• insights into organisational culture, attitudes and expected behaviours</li> <li>• supportive environment in which successes and failures can be evaluated</li> <li>• networking opportunities</li> <li>• development of workplace competence and self-confidence</li> <li>• recognition and job satisfaction</li> <li>• mutual respect.</li> </ul>
<b>Benefits to the organisation</b> may include:	<ul style="list-style-type: none"> <li>• increased productivity</li> <li>• new competencies in the person being mentored</li> <li>• staff motivation</li> <li>• more committed, involved and responsible learners.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Delivery and facilitation
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## Competency field

<b>Competency field</b>	
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## Co-requisite units

<b>Co-requisite units</b>		

## **TLIA2012A Pick and process orders**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to pick and process orders in accordance with workplace requirements including identifying workplace order picking processes, policies and procedures; picking and despatching orders, and recording stock levels. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work must be carried out in accordance with relevant codes/regulations and workplace requirements for the picking and processing of orders.

Work is performed under some supervision generally within a team environment. It involves the application of workplace procedures to the picking and processing of orders in the warehousing, distribution and/or storage industries.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Identify workplace order picking processes, policies and procedures</b>	1.1 Workplace procedures for order picking and related workplace documentation are interpreted 1.2 Stock allocation and location systems are identified and located 1.3 Appropriate manual handling equipment is selected in accordance with OH&S regulations and workplace procedures
<b>2 Pick and despatch an order</b>	2.1 Work requirements are planned with appropriate equipment and documentation assembled 2.2 Zones of the warehouse which store required products are identified and located 2.3 Pick path is established 2.4 Where required, appropriate pallet(s) for orders are selected and stacked to minimise stock damage and maximise stability 2.5 Products are selected and consolidated 2.6 Products/pallets are located in despatch areas 2.7 Products are assembled to meet workplace schedules 2.8 Orders are consolidated, secured, arranged and placed in storage zones in accordance with the schedule
<b>3 Record stock levels</b>	3.1 Storage areas are checked and stocks are noted for replenishment in accordance with workplace procedures 3.2 Workplace records are completed in accordance with workplace requirements

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Regulations relevant to the picking and processing of orders, including relevant bond, quarantine or other legislative requirements
- Relevant OH&S and environmental protection procedures and guidelines
- Workplace procedures and policies for the picking and processing of orders
- Focus of operation of work systems, equipment, management and site operating systems for the picking and processing of orders
- Problems that may occur when picking and processing an order and appropriate action that can be taken to resolve the problems

## REQUIRED KNOWLEDGE AND SKILLS

- Documentation and record requirements when picking and processing an order
- Equipment used during picking and processing operations and the precautions and procedures that should be followed in its use
- Housekeeping standards procedures required in the workplace
- Site layout and obstacles

### Required skills:

- Communicate effectively with others when picking and processing orders
- Read and comprehend simple statements in English
- Read and interpret instructions, procedures, signs and labels relevant to the picking and processing of orders
- Complete documentation related to picking and processing orders
- Identify relevant stock and goods coding and labelling, including ADG and IMDG markings
- Work collaboratively with others when picking and processing orders
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions when picking and processing orders in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unplanned events when picking and processing orders
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when picking and processing orders
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use relevant equipment and communications technology when picking and processing orders
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Estimate the size, shape and special requirements of goods/loads

## Evidence Guide

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

- |   |   |
|---|---|
| <b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b> | <ul style="list-style-type: none"><li>• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:<ul style="list-style-type: none"><li>• the underpinning knowledge and skills</li><li>• relevant legislation and workplace procedures</li><li>• other relevant aspects of the range statement</li></ul></li></ul>  |
| <b>Context of and specific resources for assessment</b>   | <ul style="list-style-type: none"><li>• Performance is demonstrated consistently over a period of time and in a suitable range of contexts</li><li>• Resources for assessment include:<ul style="list-style-type: none"><li>• a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or</li><li>• access to an appropriate range of relevant operational situations in the workplace</li></ul></li><li>• In both real and simulated environments, access is required to:<ul style="list-style-type: none"><li>• relevant and appropriate materials and equipment, and</li><li>• applicable documentation including workplace procedures, regulations, codes of practice and operation manuals</li></ul></li></ul> |
| <b>Method of assessment</b>   | <ul style="list-style-type: none"><li>• Assessment of this unit must be undertaken by a registered training organisation</li><li>• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests</li><li>• Practical assessment must occur:<ul style="list-style-type: none"><li>• through activities in an appropriately simulated environment at the registered training organisation, and/or</li><li>• in an appropriate range of situations in the workplace</li></ul></li></ul>   |

## Range Statement

### RANGE STATEMENT

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

- |   |   |
|---|---|
| Work may be conducted:  | <ul style="list-style-type: none"><li>• by day or night</li><li>• in a range of work environments</li></ul>   |
| Customers may be:   | <ul style="list-style-type: none"><li>• internal or external</li></ul>  |
| Workplaces may comprise:  | <ul style="list-style-type: none"><li>• large, medium or small worksites</li></ul>  |
| Work may be conducted in:   | <ul style="list-style-type: none"><li>• limited or restricted spaces</li><li>• exposed conditions</li><li>• controlled or open environments</li></ul>   |
| Problems that may occur when picking and processing an order include: | <ul style="list-style-type: none"><li>• wrong stock is picked</li><li>• wrong carton for order</li><li>• incorrect location</li><li>• damaged stock</li><li>• no stock at location</li><li>• incorrect quantity</li><li>• failing to meet a special order requirement</li></ul>   |
| Special order requirements may include:                               | <ul style="list-style-type: none"><li>• pricing</li><li>• special packing</li><li>• specific size of carton</li><li>• special categories of stock</li></ul>   |
| Hazards in the work area may include exposure to:                     | <ul style="list-style-type: none"><li>• chemicals</li><li>• dangerous or hazardous substances</li><li>• movements of equipment, goods and materials</li><li>• oil or water on floor</li><li>• a fire or explosion</li><li>• damaged packaging or pallets</li><li>• debris on floor</li><li>• faulty racking</li><li>• poorly stacked pallets</li><li>• faulty equipment</li></ul> |
| Consultative processes may involve:                                   | <ul style="list-style-type: none"><li>• workplace personnel</li><li>• supervisors and managers</li><li>• customers/clients</li><li>• contractors</li><li>• official representatives</li></ul>   |
| Communication in the work area may include:                           | <ul style="list-style-type: none"><li>• phone</li><li>• electronic data interchange (EDI)</li><li>• fax</li></ul>   |

## RANGE STATEMENT

- email
  - internet
  - RF communications
  - barcode readers
  - oral, aural or signed communications
  - company procedures
  - enterprise procedures
  - organisational procedures
  - established procedures
- Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:
- Personal protective equipment may include:
- gloves
  - safety headwear and footwear
  - safety glasses
  - two-way radios
  - high visibility clothing
- Information/documents may include:
- goods identification numbers and codes
  - manifests, picking slips, merchandise transfers, stock requisitions and bar codes
  - manufacturers specifications for equipment/tools
  - workplace procedures and policies
  - supplier and/or client instructions
  - material safety data sheets
  - codes of practice including the National Standards for Manual Handling and the Industry Safety Code
  - relevant legislation, regulations and related documentation
  - award, enterprise bargaining agreement, other industrial arrangements
  - standards and certification requirements
  - quality assurance procedures
  - emergency procedures
- Applicable regulations and legislation may include:
- relevant codes and regulations pertaining to the picking and processing of orders
  - Australian Dangerous Goods Code
  - relevant state/territory OH&S legislation
  - relevant state/territory environmental protection legislation
  - licence, patent or copyright arrangements
  - water and road use and licence arrangements
  - export/import/quarantine/bond requirements
  - workplace relations regulations
  - workers compensation regulations

## **Unit Sector(s)**

Not Applicable

## **Competency Field**

**Competency Field**                      A - Handling Cargo/Stock

## **TLIA2013A Receive goods**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to receive goods in accordance with regulatory and workplace requirements, including identifying workplace procedures and documentation requirements for the receipt of goods; checking and inspecting goods on arrival and completing workplace documentation; and unloading, packing and storing stock. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work must be carried out in compliance with the relevant regulations and workplace requirements concerning the receiving of goods.

Work is performed under some supervision generally within a team environment. It involves the application of workplace procedures and regulatory requirements to the receiving of goods as part of work activities in the warehousing, distribution and/or storage industries.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Identify workplace procedures and documentation requirements for the receipt of goods</b>	<p>1.1 Workplace procedures for receipt of goods are identified</p> <p>1.2 Purpose of documents associated with the receipt of goods is interpreted</p> <p>1.3 Workplace documentation requirements for the receipt of goods and reporting of damage are identified</p>
<b>2 Check and inspect goods on arrival and complete workplace documentation</b>	<p>2.1 Procedures for checking of goods in comparison with orders or manifests are identified and followed</p> <p>2.2 Discrepancies and/or damaged goods are reported</p> <p>2.3 Non-conforming goods are appropriately documented and despatched or stored in accordance with company procedures</p>
<b>3 Unload, unpack and store stock</b>	<p>3.1 Appropriate manual handling techniques and equipment are identified</p> <p>3.2 Safe work procedures are used when unloading, unpacking and storing stock</p> <p>3.3 Advice on appropriate storage locations and requirements for particular products is sought</p> <p>3.4 Goods are unloaded and unpacked in accordance with workplace procedures</p> <p>3.5 Assistance from others is sought when required to maintain safe and effective work</p> <p>3.6 Directions are followed to store stock in appropriate areas</p>

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Australian and international codes and regulations relevant to the receiving of goods including the ADG Code and relevant bond, quarantine or other legislative requirements
- Relevant OH&S and environmental protection procedures and guidelines
- Workplace procedures and policies for the receiving of goods
- Focus of operation of work systems, equipment, management and site operating systems for the receiving of goods
- Problems that may occur when receiving goods and appropriate action that can be taken to resolve the problems

## REQUIRED KNOWLEDGE AND SKILLS

- Specifications and standards for the checking and inspection of received goods
- Documentation requirements for the receiving of goods
- Housekeeping standards procedures required in the workplace
- Site layout and obstacles

### Required skills:

- Communicate effectively with others when receiving goods
- Read and comprehend simple statements in English
- Read and interpret instructions, procedures, information, labels and signs relevant to receiving goods
- Complete documentation related to the receipt of goods
- Identify containers and goods coding, ADG and IMDG markings and where applicable emergency information panels
- Work collaboratively with others when receiving goods
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems when receiving goods in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unplanned events when receiving goods
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when receiving goods
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use relevant load handling equipment when receiving goods
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Estimate the size, shape and special requirements of goods and loads

## Evidence Guide

### EVIDENCE GUIDE

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

- |   |   |
|---|---|
| <b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b> | <ul style="list-style-type: none"><li>• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:<ul style="list-style-type: none"><li>• the underpinning knowledge and skills</li><li>• relevant legislation and workplace procedures</li><li>• other relevant aspects of the range statement</li></ul></li></ul>  |
| <b>Context of and specific resources for assessment</b>   | <ul style="list-style-type: none"><li>• Performance is demonstrated consistently over a period of time and in a suitable range of contexts</li><li>• Resources for assessment include:<ul style="list-style-type: none"><li>• a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or</li><li>• access to an appropriate range of relevant operational situations in the workplace</li></ul></li><li>• In both real and simulated environments, access is required to:<ul style="list-style-type: none"><li>• relevant and appropriate materials and equipment, and</li><li>• applicable documentation including workplace procedures, regulations, codes of practice and operation manuals</li></ul></li></ul> |
| <b>Method of assessment</b>   | <ul style="list-style-type: none"><li>• Assessment of this unit must be undertaken by a registered training organisation</li><li>• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests</li><li>• Practical assessment must occur:<ul style="list-style-type: none"><li>• through activities in an appropriately simulated environment at the registered training organisation, and/or</li><li>• in an appropriate range of situations in the workplace</li></ul></li></ul>   |

## Range Statement

### RANGE STATEMENT

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

- |  |  |
|--|--|
| Work may be conducted:   | <ul style="list-style-type: none"><li>• in a range of work environments</li><li>• by day or night</li></ul>  |
| Customers may be:  | <ul style="list-style-type: none"><li>• internal or external</li></ul>   |
| Workplaces may comprise:   | <ul style="list-style-type: none"><li>• large, medium or small worksites</li></ul>   |
| Work may be conducted in:  | <ul style="list-style-type: none"><li>• limited or restricted spaces</li><li>• exposed conditions</li><li>• controlled or open environments</li></ul>  |
| Received goods may involve:                                      | <ul style="list-style-type: none"><li>• special handling and storage requirements, including temperature controlled goods and dangerous goods</li></ul>  |
| Problems that may occur when receiving goods may include:        | <ul style="list-style-type: none"><li>• damaged stock</li><li>• damaged pallets or packaging</li><li>• wrong stock</li><li>• error in paperwork</li><li>• poorly stacked stock</li><li>• incorrect quantity</li></ul>  |
| Aspects of goods to be checked when receiving goods may include: | <ul style="list-style-type: none"><li>• correct type</li><li>• number</li><li>• condition</li><li>• quality</li><li>• packaging</li><li>• labelling</li><li>• dangerous goods declarations and markings (where applicable)</li></ul>   |
| Hazards in the work area may include exposure to:                | <ul style="list-style-type: none"><li>• chemicals</li><li>• dangerous or hazardous substances</li><li>• movements of equipment, goods and materials</li><li>• oil or water on floor</li><li>• fire or explosion</li><li>• damaged packaging or pallets</li><li>• debris on floor</li><li>• poorly stacked pallets</li><li>• faulty equipment</li></ul> |
| Consultative processes may involve:                              | <ul style="list-style-type: none"><li>• other employees and supervisors</li><li>• suppliers, customers and clients</li><li>• drivers and agents</li><li>• relevant authorities and institutions</li></ul>  |

## RANGE STATEMENT

Communication in the work area may include:	<ul style="list-style-type: none"><li>• management and union representatives</li><li>• industrial relations and OH&amp;S specialists</li><li>• other maintenance, professional or technical staff</li><li>• phone</li><li>• electronic data interchange (EDI)</li><li>• fax</li><li>• email</li><li>• internet</li><li>• RF systems</li><li>• oral, aural or signed communications</li></ul>
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	<ul style="list-style-type: none"><li>• company procedures</li><li>• enterprise procedures</li><li>• organisational procedures</li><li>• established procedures</li></ul>
Personal protective equipment may include:	<ul style="list-style-type: none"><li>• gloves</li><li>• safety headwear and footwear</li><li>• safety glasses</li><li>• two-way radios</li><li>• high visibility clothing</li></ul>
Information/documents may include:	<ul style="list-style-type: none"><li>• goods identification numbers and codes</li><li>• manifests, picking slips, merchandise transfers, stock requisitions and bar codes</li><li>• codes of practice and regulations relevant to the receiving of goods</li><li>• Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances</li><li>• operations manuals, job specifications and induction documentation</li><li>• manufacturers specifications for equipment</li><li>• workplace procedures and policies</li><li>• supplier and/or client instructions</li><li>• dangerous goods declarations and material safety data sheets (where applicable)</li><li>• award, enterprise bargaining agreement, other industrial arrangements</li><li>• relevant Australian standards and certification requirements</li><li>• quality assurance procedures</li><li>• emergency procedures</li></ul>
Applicable regulations and	<ul style="list-style-type: none"><li>• relevant codes and regulations for the receiving of goods</li></ul>

**RANGE STATEMENT**

legislation may include:

- Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances, including:
  - Australian and International Dangerous Goods Codes
  - Australian Marine Orders and the International Maritime Dangerous Goods Code
  - IATA Dangerous Goods by Air Regulations
  - Australian and international explosives codes
- licence, patent or copyright arrangements
- water and road use and licence arrangements
- export/import/quarantine/bond requirements
- marine orders
- relevant state/territory OH&S and environmental protection legislation
- workplace relations regulations
- workers compensation regulations

**Unit Sector(s)**

Not Applicable

**Competency Field**

**Competency Field**                      A - Handling Cargo/Stock

## **TLIA2020A Replenish stock**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to replenish stock in accordance with workplace requirements including participating in stock rotation activities, interpreting and filling replenishment requests, and completing all required stock replenishment tasks. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work must be carried out in compliance with the relevant regulations and workplace requirements concerning the replenishment of stock.

Work is performed under some supervision generally within a team environment. It involves the application of product knowledge and an understanding of relevant workplace procedures and regulatory requirements to replenish stock as part of work activities in the warehousing, distribution and/or storage industries.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Participate in stock rotation activities</b>	<p>1.1 Stock levels are counted against appropriate documentation</p> <p>1.2 Stock levels are recorded and reported</p> <p>1.3 Stocks are replenished, adjusted or rotated following workplace procedures</p> <p>1.4 Stock re-ordering processes are activated when appropriate</p> <p>1.5 Routine and non-routine problems with products or storage systems are reported following workplace procedures</p>
<b>2 Interpret and fill replenishment request</b>	<p>2.1 Order request documentation is interpreted</p> <p>2.2 Product(s) in order noted and workplace location(s) are identified</p> <p>2.3 Workplace and product knowledge is used to plan sequence of work</p> <p>2.4 Appropriate materials handling equipment is selected in accordance with workplace procedures and timeframes and OH&amp;S regulations</p> <p>2.5 Required schedules for order movement and despatch or storage are identified</p>
<b>3 Complete stock replenishment</b>	<p>3.1 Products are sorted, assembled and consolidated in the appropriate storage areas</p> <p>3.2 Work is checked in accordance with company procedures</p> <p>3.3 Documentation and records are completed in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Australian codes and regulations relevant to the replenishment of stock
- Relevant OH&S and environmental protection procedures and guidelines
- Workplace procedures and policies for the replenishment of stock
- Focus of operation of work systems, equipment, management and site operating systems for the replenishment of stock
- Principles of operation and functions of stock control systems
- Computer records and documentation requirements for the replenishment of stock

## REQUIRED KNOWLEDGE AND SKILLS

- Housekeeping standards procedures required in the workplace
- Site layout and obstacles

### Required skills:

- Communicate effectively with others when replenishing stock
- Read and comprehend simple statements in English
- Read and interpret instructions, procedures and labels relevant to the replenishment of stock
- Complete documentation related to the replenishment of stock
- Work collaboratively with others when replenishing stock
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may arise when replenishing stock in accordance with regulatory requirements and workplace procedures
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in stock and equipment in accordance with standard operating procedures
- Select and use relevant communications, computing and office equipment when replenishing stock
- Select and use required personal protective equipment conforming to industry and OH&S standards

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

#### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills

## EVIDENCE GUIDE

### Context of and specific resources for assessment

- relevant legislation and workplace procedures
- other relevant aspects of the range statement
- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

### Method of assessment

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
  - through activities in an appropriately simulated environment at the registered training organisation, and/or
  - in an appropriate range of situations in the workplace

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Work may be conducted:

- a range of work environments
- by day or night

Customers may be:

- internal or external

Workplaces may comprise:

- large, medium or small worksites

## RANGE STATEMENT

- Work may be conducted in:
- limited or restricted spaces
  - exposed conditions
  - controlled or open environments
- Goods may involve:
- special handling, location, storage and/or packaging requirements, including temperature controlled goods and dangerous goods
- Inventory systems may be:
- automated
  - manual
  - paper-based
  - computerised
  - microfiche
- Categories or groups of products/stock may include:
- small parts
  - perishable goods
  - overseas export
  - dangerous goods
  - refrigerated products
  - temperature controlled stock
  - fragile goods
- The characteristics of products/stock may include:
- small parts
  - toxicity
  - flammability
  - form
  - weight
  - size
  - state
  - perishability
  - fragility
  - security risk
- Labelling systems may include:
- batch code
  - bar code
  - identification numbering systems
  - serial numbers
  - symbols for safe handling
  - ADG and HAZCHEM Codes
- Hazards in the work area may include:
- chemicals
  - dangerous or hazardous substances
  - movements of equipment, goods and materials
  - oil or water on floor
  - a fire or explosion
  - damaged packaging or pallets

## RANGE STATEMENT

	<ul style="list-style-type: none"><li>• debris on floor</li><li>• faulty racking</li><li>• poorly stacked pallets</li><li>• faulty equipment</li></ul>
Communication in the work area may include:	<ul style="list-style-type: none"><li>• phone</li><li>• electronic data interchange (EDI)</li><li>• fax</li><li>• email</li><li>• internet</li><li>• RF systems</li><li>• oral, aural or signed communications</li></ul>
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	<ul style="list-style-type: none"><li>• company procedures</li><li>• enterprise procedures</li><li>• organisational procedures</li><li>• established procedures</li></ul>
Personal protective equipment may include:	<ul style="list-style-type: none"><li>• gloves</li><li>• safety headwear and footwear</li><li>• safety glasses</li><li>• two-way radios</li><li>• high visibility clothing</li></ul>
Consultative processes may involve:	<ul style="list-style-type: none"><li>• other employees and supervisors</li><li>• suppliers, customers and clients</li><li>• relevant authorities and institutions</li><li>• management and union representatives</li><li>• industrial relations and OH&amp;S specialists</li><li>• other maintenance, professional or technical staff</li></ul>
Information/documents may include:	<ul style="list-style-type: none"><li>• goods identification numbers and codes</li><li>• manifests, picking slips, merchandise transfers, stock requisitions and bar codes</li><li>• codes of practice and regulations relevant to the identification, handling and stacking of goods</li><li>• Australian and international regulations and codes of practice for the handling, stacking and transport of dangerous goods and hazardous substances</li><li>• operations manuals, job specifications and induction documentation</li><li>• manufacturers specifications for equipment</li><li>• workplace procedures and policies</li><li>• supplier and/or client instructions</li><li>• dangerous goods declarations and material safety data</li></ul>

## RANGE STATEMENT

Applicable regulations and legislation may include:

- sheets (where applicable)
- award, enterprise bargaining agreement, other industrial arrangements
- relevant Australian standards and certification requirements
- quality assurance procedures
- emergency procedures
- relevant codes and regulations for the packaging of goods
- Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances, including:
  - Australian and International Dangerous Goods Codes
  - Australian and International Explosives Codes
- licence, patent or copyright arrangements
- water and road use and licence arrangements
- export/import/quarantine/bond requirements
- relevant state/territory OH&S and environmental protection legislation
- workplace relations regulations
- workers compensation regulations

## Unit Sector(s)

Not Applicable

## Competency Field

**Competency Field**                      A - Handling Cargo/Stock

## **TLIA3039A Receive and store stock**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to receive and store stock for a workplace store in an enterprise/organisation in a transport, distribution, production, hospitality, retail or other relevant industry sector. It specifically covers taking delivery of stock, storing the received stock, and rotating and maintaining stock in accordance with relevant regulatory and workplace procedures. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work must be must be carried out in compliance with the relevant codes of practice, regulations and workplace procedures for the receipt and storage of stock in a workplace store.

Work is performed under general supervision, with some accountability and responsibility for self and others in achieving the prescribed outcomes. It involves the application of routine principles and procedures to safely and efficiently receive and store stock in a workplace store.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

### ELEMENT

### PERFORMANCE CRITERIA

- |                                    |  |
|------------------------------------|--|
| <b>1 Take delivery of stock</b>    | 1.1 Incoming stock is accurately checked against orders and delivery documentation in accordance with workplace procedures<br>1.2 Variations are accurately identified, recorded and communicated to the appropriate person<br>1.3 Items are inspected for damage, quality, use-by dates, breakages or discrepancies, and records are made in accordance with workplace policy   |
| <b>2 Store stock</b>               | 2.1 All stock is promptly and safely transported to an appropriate storage area without damage<br>2.2 Stock is stored in the appropriate location within the area and in accordance with workplace security procedures<br>2.3 Appropriate personal protective equipment is correctly used during receipt and storage operations<br>2.4 Stock levels are accurately recorded in accordance with workplace procedures<br>2.5 Stock is labelled in accordance with workplace procedures |
| <b>3 Rotate and maintain stock</b> | 3.1 Stock is rotated, where required, in accordance with workplace policy<br>3.2 Stock is moved using appropriate equipment, if necessary, in accordance with OH&S requirements, relevant regulations and workplace procedures<br>3.3 Quality of stock is checked and reported<br>3.4 Appropriate action is taken where the quality of the stock is found to be outside specified standards<br>3.5 Stock is placed in storage or disposed of in accordance with workplace policy     |
| <b>4 Complete documentation</b>    | 4.1 All required records and documentation are completed in accordance with workplace procedures   |

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Relevant codes of practice and legislative requirements (for example dangerous goods)

## REQUIRED KNOWLEDGE AND SKILLS

regulations, health and hygiene regulations, etc.)

- Relevant OH&S and environmental procedures and regulations
- Principles of stock control
- Stock control documentation and systems used in workplace stores
- Interpretation of workplace specifications and orders for supplies
- Stock security systems
- Safe lifting and handling procedures
- Protocols and procedures for liaising with supplier representatives, drivers and colleagues using appropriate technology
- Code of practice for working collaboratively with others
- Systems for the completion of relevant records and documentation
- Problems that may occur when receiving and storing stock and appropriate action that can be taken to resolve the problems
- Contacts and sources of information and documentation needed when receiving and storing stock
- Site layout
- The purpose and procedures for the use of relevant personal protective equipment
- Customer service policies and procedures
- Procedures for operating electronic communications equipment

### Required skills:

- Communicate effectively with others when receiving and storing stock
- Read and interpret instructions, procedures and labels relevant to receiving and storing stock
- Complete documentation related to receiving and storing stock
- Work collaboratively with others when receiving and storing stock
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may occur when receiving and storing stock in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unplanned events
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures

**Required skills:**

- Select and use required personal protective equipment conforming to industry and OH&S standards
- Select and use relevant communication and computing equipment when receiving and storing stock

**Evidence Guide****EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills
  - relevant legislation and workplace procedures
  - other relevant aspects of the range statement

**Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

**Method of assessment**

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:

## EVIDENCE GUIDE

- through activities in an appropriately simulated environment at the registered training organisation, and/or
- in an appropriate range of situations in the workplace

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

This unit may apply to:

- any workplace store in an enterprise/organisation in a transport, distribution, production, hospitality, retail or other relevant industry sector (excluding work areas and organisations involving major and/or dedicated warehousing)

Suppliers may be:

- internal or external

Requirements for work may include:

- workplace protocols and procedures
- communications equipment
- workplace operations manuals
- relevant regulations, authorities and permits
- hours of operation
- relevant record keeping requirements
- workplace quality and customer service standards

Stock control and record systems may be:

- manual
- computerised

Stock may include but is not limited to:

- production materials
- packaging materials
- equipment and tools
- office and stationery supplies
- forms, brochures and documents
- vouchers and tickets
- merchandise for sale
- linen
- food and beverage supplies

Consultative processes may involve:

- suppliers, representatives and drivers
- relevant authorities
- other employees and supervisors

## RANGE STATEMENT

- Communications systems may involve:
- management
  - other professional or technical staff
  - telephone
  - fax
  - email
  - electronic data transfer of information
  - mail
- Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:
- company procedures
  - enterprise procedures
  - organisational procedures
  - established procedures
- Personal protective equipment may include but is not limited to:
- gloves
  - safety headwear and footwear
  - safety glasses
  - two-way radios
  - high visibility clothing
- Documentation/records may include:
- workplace protocols and procedures
  - workplace specifications for the stock concerned
  - relevant regulations
  - supplier instructions
  - operations manuals
  - documentation including order forms, standard letters, etc.
  - induction documentation
  - delivery options
  - relevant Australian and international standards, criteria and certification requirements
  - communications technology equipment, oral, aural or signed communications
  - quality assurance procedures
  - emergency procedures
  - relevant competency standards and training materials
- Applicable procedures and codes may include:
- relevant regulations and codes of practice for receipt and storage of stock concerned
  - Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances, including:
    - Australian and International Dangerous Goods Codes
    - Australian and International Explosives Codes
  - Australian and international standards and certification requirements

**RANGE STATEMENT**

- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation

**Unit Sector(s)**

Not Applicable

**Competency Field**

**Competency Field**                      A - Handling Cargo/Stock

## **TLIA4005A Check and evaluate records and documentation**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to check and evaluate records and documentation in accordance with regulatory and workplace requirements including checking documentation and analysing and evaluating records. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work must be carried out in compliance with the relevant standards, regulations and workplace requirements concerning the documentation requirements for the local and international transport of cargo and containers.

Work is performed under some supervision generally within a team environment. It involves the application of workplace procedures and regulatory requirements to the checking and evaluation of documentation for the local and international transport of cargo and containers as part of work activities in the stevedoring, transport, distribution and allied industries.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Check documentation</b>	<p>1.1 Documentation is checked to ensure its compliance with regulatory and workplace requirements</p> <p>1.2 Documentation is checked on a regular basis, and the personnel responsible for documentation are advised of deadlines</p> <p>1.3 Use of systems for the maintenance of records complies with regulatory and workplace requirements</p>
<b>2 Analyse and evaluate records</b>	<p>2.1 Records are analysed to identify unexpected deviations from plans or possible future problems with plant and equipment</p> <p>2.2 Advice is provided to appropriate personnel when problems are identified</p> <p>2.3 Security of records and documentation is maintained at all times with access being granted to authorised personnel in accordance with workplace procedures</p>

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Australian and international standards, codes and regulations relevant to the documentation requirements for the local and international transport of cargo and containers including the Australian and International Dangerous Goods Codes
- Relevant OH&S and environmental protection procedures and guidelines
- Workplace procedures and policies for checking and evaluating documentation for the local and/or international transport of cargo and containers
- Focus of operation of work systems, equipment, management and site operating systems for checking and evaluating cargo/container transport documentation
- Problems that may occur when checking and evaluating documentation and appropriate action that can be taken to resolve the problems
- Types of cargo, containers and transport modes and the documentation requirements for each
- Site layout, loading/unloading plans and sequence sheets
- The marking and numbering systems for cargo
- Relevant bond, quarantine or other legislative requirements

#### Required skills:

**Required skills:**

- Communicate effectively with others when checking and evaluating transport documentation
- Read and interpret instructions, procedures and labels relevant to checking and evaluating transport documentation
- Receive, acknowledge and send messages with available communications equipment
- Identify cargo, container and goods, coding, ADG and IMDG markings and where applicable emergency information panels
- Work collaboratively with others when checking and evaluating transport documentation
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions when checking and evaluating transport documentation in accordance with regulatory requirements and workplace procedures
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Identify, select and use relevant equipment, processes and procedures when checking and evaluating documentation for the local and/or international transport of cargo and containers

**Evidence Guide****EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills
  - relevant legislation and workplace procedures
  - other relevant aspects of the range statement

**Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational

## EVIDENCE GUIDE

	<p>situations in the workplace</p> <ul style="list-style-type: none"> <li>• In both real and simulated environments, access is required to:             <ul style="list-style-type: none"> <li>• relevant and appropriate materials and equipment, and</li> <li>• applicable documentation including workplace procedures, regulations, codes of practice and operation manuals</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment of this unit must be undertaken by a registered training organisation</li> <li>• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests</li> <li>• Practical assessment must occur:             <ul style="list-style-type: none"> <li>• through activities in an appropriately simulated environment at the registered training organisation, and/or</li> <li>• in an appropriate range of situations in the workplace</li> </ul> </li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Work may be conducted in:	<ul style="list-style-type: none"> <li>• a range of work environments</li> <li>• by day or night</li> </ul>
Customers may be:	<ul style="list-style-type: none"> <li>• internal or external</li> </ul>
Workplaces may comprise:	<ul style="list-style-type: none"> <li>• large, medium or small worksites</li> </ul>
Work may be conducted in:	<ul style="list-style-type: none"> <li>• limited or restricted spaces</li> <li>• exposed conditions</li> <li>• controlled or open environments</li> <li>• office environments</li> </ul>
Cargo/freight may include:	<ul style="list-style-type: none"> <li>• goods with specialist requirements, including temperature controlled goods and dangerous goods</li> </ul>
Hazards in the work area may include exposure to:	<ul style="list-style-type: none"> <li>• chemicals</li> <li>• dangerous or hazardous substances</li> <li>• movements of equipment, goods, materials and vehicular traffic</li> </ul>

## RANGE STATEMENT

Personnel in work area may include:

- workplace personnel
- site visitors
- contractors
- official representatives

Personal protective equipment may include:

- gloves
- safety headwear and footwear
- safety glasses
- two-way radios
- protective clothing
- high visibility clothing

Communication in the work area may include:

- phone
- fax
- email
- electronic data transfer (EDI)
- RF systems
- radio
- oral, aural or signed communications

Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:

- company procedures
- enterprise procedures
- organisational procedures
- established procedures

Information/documents may include:

- goods identification numbers and codes
- manifests, bar codes, and container identification/serial number
- Australian and international codes of practice and regulations relevant to the documentation requirements for the local and/or international transport of cargo and containers
- Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances
- operations manuals, job specifications and induction documentation
- manufacturers specifications for equipment
- workplace procedures and policies
- supplier and/or client instructions
- dangerous goods declarations and material safety data sheets (where applicable)
- award, enterprise bargaining agreement, other industrial arrangements
- relevant Australian standards and certification

## RANGE STATEMENT

Applicable regulations and legislation may include:

- requirements
- quality assurance procedures
- emergency procedures
- relevant standards, codes and regulations relevant to the documentation requirements for the local and international transport of cargo and containers
- Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances, including:
  - Australian and International Dangerous Goods Codes
  - Australian Marine Orders and the International Maritime Dangerous Goods Code
  - IATA Dangerous Goods by Air regulations
  - Australian and International Explosives Codes
- licence, patent or copyright arrangements
- water and road use and licence arrangements
- export/import/quarantine/bond requirements
- marine orders
- relevant Australian standards and certification requirements
- relevant state/territory OH&S and environmental protection legislation
- workplace relations regulations
- workers compensation regulations

## Unit Sector(s)

Not Applicable

## Competency Field

Competency Field                      A - Handling Cargo/Stock

## **TLIA5058A Manage facility and inventory requirements**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to manage a facility and its inventory requirements. It includes identifying space, safety and security requirements; developing a documentation system; designing storage zones; and evaluating facility utilisation. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work may be undertaken in various contexts within the transport and logistics industry.

This unit generally applies to those who provide leadership of others individually or in teams.

This unit is normally packaged at AQF V or above.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

### ELEMENT

### PERFORMANCE CRITERIA

#### 1 Identify space requirements

- 1.1 The medium-term and long-term storage needs of the organisation are assessed to facilitate planning in accordance with the business plan of the enterprise and legislative requirements
- 1.2 Product type, picking frequencies, value, fragility, weight, handling characteristics, quantity and holding periods are assessed to consider type and amount of storage
- 1.3 Facility is assessed to determine the stock holding and handling requirements for each inventory item
- 1.4 Volume requirements are calculated to ensure that ongoing stock holding needs are met
- 1.5 The total space requirement is calculated and used to formulate plan for space utilisation

#### 2 Identify safety and security requirements

- 2.1 An assessment is made of risks to ensure maximum safety and security for personnel, stock and facilities
- 2.2 Storage handling security and incident/emergency procedures for each class or type of product are identified and documented
- 2.3 Fire prevention and firefighting systems are identified in accordance with building code regulations and storage material requirements
- 2.4 An evacuation plan is developed in accordance with the safety program of the enterprise

#### 3 Develop documentation system

- 3.1 A system for recording and tracing stock location, receipt, throughput and despatch is developed and implemented to enable reporting, quality assurance and financial requirements to be met
- 3.2 A system for recording communication with carriers, customers and employees is developed and implemented to assess operational effectiveness and to provide data for system improvement

#### 4 Design storage zones

- 4.1 Space requirements and equipment operation are accurately assessed to facilitate the planning of warehouse zones
- 4.2 An assessment is made of the facility to enable the most effective use of available space
- 4.3 Positioning of storage areas, bays, work stations and the like is undertaken in accordance with data obtained from the planning process
- 4.4 Provision for maintenance and cleaning is catered for

#### 5 Evaluate facility utilisation

- 5.1 A continual system of review is used involving regular checks to ensure storage areas and systems are functioning at optimum levels

**ELEMENT****PERFORMANCE CRITERIA**

- 5.2 Receiving and despatch systems provide efficient operations
- 5.3 Storage and handling systems provide ease of access and comply with ergonomic principles
- 5.4 Product handling and storage minimises product damage, contamination and stock losses
- 5.5 Facility layout remains sufficiently flexible to meet changing storage and handling requirements
- 5.6 Appropriate reporting systems are established and used to maintain data for the design of improved facilities and systems

**Required Skills and Knowledge****REQUIRED KNOWLEDGE AND SKILLS**

This describes the essential knowledge and skills and their level required for this unit.

**Required knowledge:**

- Relevant sections of national and state or territory regulatory requirements and codes of practice, including knowledge of fire safety and building regulations applicable to the facility
- Relevant OH&S and environmental procedures and regulations
- Focus of operation of warehouse systems, resources, management and workplace operating systems
- Enterprise business policies and plans including procedures for operations of the facility
- Throughput and storage requirements for specific types of inventory
- Principles, purpose and location of controls, monitoring devices, and systems
- Selection and appropriate application of technology, information systems and procedures
- Procedures for operating electronic communications equipment
- Requirements for completing relevant documentation
- Procedures for managing and controlling hazardous situations when carrying out work activities, particularly those that relate to the storage of materials
- Procedures to be followed in the event of an emergency

**Required skills:**

- Communicate effectively with others when managing facility and inventory requirements
- Read and interpret plans, diagrams, regulations, codes of practice and other documentation relevant to the management of facilities and inventory requirements
- Provide leadership to others when managing facilities and inventory requirements

**Required skills:**

- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and or rectify any identified problems that may arise during the planning and management of facilities and inventory requirements
- Develop and implement contingency plans for unplanned events which may arise during the management of facilities and inventory requirements
- Prioritise work and coordinate the work of others
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- Select and apply appropriate technology, information systems and procedures when managing facility and inventory requirements

**Evidence Guide****EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills
  - relevant legislation and workplace procedures
  - other relevant aspects of the range statement

**Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace

## EVIDENCE GUIDE

	procedures, regulations, codes of practice and operation manuals
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment of this unit must be undertaken by a registered training organisation</li> <li>• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests</li> <li>• Practical assessment must occur:               <ul style="list-style-type: none"> <li>• through activities in an appropriately simulated environment at the registered training organisation, and/or</li> <li>• in an appropriate range of situations in the workplace</li> </ul> </li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The workplace environment may involve:	<ul style="list-style-type: none"> <li>• twenty four hour operation</li> <li>• single and multi site location</li> <li>• large, medium and small companies</li> </ul>
Depending on the organisation concerned, workplace procedures may be called:	<ul style="list-style-type: none"> <li>• standard operating procedures (SOPs)</li> <li>• company procedures</li> <li>• enterprise procedures</li> <li>• organisational procedures</li> <li>• established procedures</li> </ul>
Communication in the work area may include:	<ul style="list-style-type: none"> <li>• phone</li> <li>• electronic data interchange (EDI)</li> <li>• fax</li> <li>• email</li> <li>• internet</li> <li>• RF systems</li> <li>• oral, aural or signed communications</li> </ul>
Consultative processes may involve:	<ul style="list-style-type: none"> <li>• other employees and supervisors</li> <li>• relevant authorities and institutions</li> <li>• management and union representatives</li> <li>• industrial relations and OH&amp;S specialists</li> <li>• customers and suppliers</li> </ul>

## RANGE STATEMENT

Documentation and records may include:

- other professional or technical staff, contractors and maintenance personnel
- regulations and codes of practice relevant to the functions of a storage facility, including the ADG code, fire safety and firefighting regulations, building code regulations, storage and handling procedures, and security procedures relevant to the specific facility
- relevant OH&S and environmental protection regulations
- quality assurance procedures
- emergency procedures, particularly in relation to fire and evacuation
- operations manuals, job specifications and induction documentation
- relevant Australian Standards and certification requirements

Applicable legislation and regulations may include:

- Australian and international regulations and codes of practice for the transport of dangerous goods and hazardous substances
- relevant state/territory OH&S and environmental protection legislation
- building codes, fire safety and firefighting codes and regulations

## Unit Sector(s)

Not Applicable

## Competency Field

**Competency Field**                      A - Handling Cargo/Stock

## **TLID1001A Shift materials safely using manual handling methods**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to shift loads using manual handling methods, including assessing the risks associated with relocating the load, planning the relocation process and carrying out the relocation in accordance with the plan. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work must be carried out in compliance with the relevant OH&S regulations concerning the manual handling and movement of loads.

Work is performed under some supervision generally within a team environment.

Work involves the application of the basic principles for the safe manual handling techniques and movement of loads when shifting materials using manual handling methods as part of day-to-day work.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Assess risks associated with the relocation of the load</b>	<ul style="list-style-type: none"><li>1.1 Products, goods or materials to be relocated are identified and assessed for the appropriate method of relocation</li><li>1.2 Locations for storage are determined and potential routes to be followed are identified</li><li>1.3 Effect of load relocation on original load base is predicted</li><li>1.4 Points of balance are estimated</li><li>1.5 Required clearances are compared to available space and adjustments are made</li><li>1.6 Effects of moving contents which may be loose, liquid, dangerous or hazardous are considered</li><li>1.7 Potential risks in route(s) which may be followed are considered</li><li>1.8 Risks to self are identified arising from the required lifting, load carrying, set down or movement of the goods</li><li>1.9 Manual handling procedures for lifting, lowering and carrying, pushing and pulling are identified</li><li>1.10 Team lifting processes are considered for application</li><li>1.11 Appropriate personal protective equipment is worn</li><li>1.12 Size to weight ratio of items to be manually handled are identified</li></ul>
<b>2 Plan load relocation</b>	<ul style="list-style-type: none"><li>2.1 Relocation of the load is planned consistent with the code of practice for manual handling</li><li>2.2 Process for relocating load is proposed including predicting and planning for potential difficulties</li><li>2.3 Proposed process is checked against code of practice and workplace procedures for compliance</li></ul>
<b>3 Relocate load</b>	<ul style="list-style-type: none"><li>3.1 Actions for lifting, lowering and carrying, pulling and pushing a load are in accordance with workplace procedures and OH&amp;S requirements</li><li>3.2 Applications appropriate for team relocation of load are identified</li><li>3.3 Team lifting tasks are coordinated</li><li>3.4 Planned process and route are followed</li><li>3.5 Relocated materials are set down without damage to goods, personnel or equipment and checked for stability</li><li>3.6 Relocation is checked to see that it meets work requirements, with any variance(s) reported</li></ul>

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Relevant OH&S procedures and guidelines concerning the manual lifting and movement of loads
- Risks when manually lifting and handling materials and goods and related precautions to control the risk, including: the load on the spine during lifting; controlled actions on a movement during lifting; rotation and side movement of the spine during lifting; postures and positions during lifting; work layout; the type, weight and position of the load; frequency of shifting operations; distance over which load is to be shifted; and time allowed for the shifting of the load
- Workplace procedures and policies for manual handling
- Housekeeping standards procedures required in the workplace
- Site layout and obstacles

#### Required skills:

- Communicate effectively with others when manually lifting and handling materials and goods
- Read and interpret instructions, procedures and information relevant to the manual lifting and handling of materials and goods
- Interpret and follow operational instructions and prioritise work
- Work collaboratively with others when manually lifting and handling materials and goods
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may arise when manually lifting and handling materials and goods in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected situations that may occur when manually lifting and handling materials and goods
- Apply precautions and required action to minimise, control or eliminate risks that may exist when manually lifting and handling materials and goods
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Apply fatigue management knowledge and techniques
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in loads and materials in accordance with standard operating

**Required skills:**

procedures

- Select and use required personal protective equipment conforming to industry and OH&S standards

**Evidence Guide****EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of:
  - applying the underpinning knowledge and skills
  - interpreting manual handling risks
  - using correct manual handling practices
  - applying relevant legislation and workplace procedures

**Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

**Method of assessment**

- As a minimum, assessment of knowledge must be conducted through appropriate assessments using written/practical/oral assessments
- Practical assessment must occur:
  - through activities in an appropriately simulated

## EVIDENCE GUIDE

- environment, and/or
- in an appropriate range of situations in the workplace

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

- |   |   |
|---|---|
| The shifting operations may be conducted:         | <ul style="list-style-type: none"><li>• in a range of work environments</li><li>• by day or night</li></ul>   |
| Customers may be:                                 | <ul style="list-style-type: none"><li>• internal or external</li></ul>  |
| Workplaces may comprise:                          | <ul style="list-style-type: none"><li>• large, medium or small worksites</li></ul>  |
| Work may be conducted in:                         | <ul style="list-style-type: none"><li>• restricted spaces</li><li>• exposed conditions</li><li>• controlled or open environments</li></ul>  |
| Materials to be shifted may include:              | <ul style="list-style-type: none"><li>• goods</li><li>• large luggage items</li><li>• baggage items</li><li>• equipment and tools</li><li>• cleaning materials</li><li>• components and parts of vehicles and equipment such as tyres, batteries, lifting gear, etc.</li><li>• materials used in the course of work such as drums of fuel, raw materials, packaging, etc.</li></ul> |
| Loads to be shifted may be:                       | <ul style="list-style-type: none"><li>• irregularly shaped</li><li>• packaged or unpackaged</li><li>• labelled or unlabelled</li></ul>  |
| Hazards in the work area may include exposure to: | <ul style="list-style-type: none"><li>• chemicals</li><li>• dangerous or hazardous substances</li><li>• movements of equipment, goods and materials</li><li>• weight of items being handled</li></ul>   |
| Personnel in the work area may include:           | <ul style="list-style-type: none"><li>• workplace personnel</li><li>• site visitors</li><li>• contractors</li><li>• official representatives</li></ul>  |

## RANGE STATEMENT

Communication in the work area may include:

- phone
- electronic data interchange
- fax
- email
- internet
- radio
- oral, aural or signed communications

Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:

- company procedures
- enterprise procedures
- organisational procedures
- established procedures

Personal protective equipment may include:

- gloves
- safety headwear and footwear
- safety glasses
- two-way radios
- high visibility clothing

Information/documents may include:

- goods identification numbers and codes
- manifests, bar codes, goods and container identification
- manufacturers specifications for equipment/tools
- workplace procedures and policies
- supplier and/or client instructions
- material safety data sheets
- codes of practice including the National Standards for Manual Handling and the Industry Safety Code
- relevant legislation, regulations and related documentation
- award, enterprise bargaining agreement, other industrial arrangements
- standards and certification requirements
- quality assurance procedures
- emergency procedures

Applicable regulations and legislation may include:

- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation
- workplace relations regulations
- workers compensation regulations
- licence, patent or copyright arrangements
- dangerous goods and air freight regulations
- export/import/quarantine/bond requirements
- marine orders

## Unit Sector(s)

Not Applicable

## Competency Field

Competency Field                      D - Load Handling

## **TLID2004A Load and unload goods/cargo**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to load and unload goods and cargo, including loading and unloading goods, securing and protecting the load and completing all required documentation. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work must be carried out in compliance with the relevant regulations/permit requirements including those of the relevant state/territory roads and traffic authority concerning the loading of goods/cargo.

Work is performed under some supervision generally within a team environment. It involves the application of the basic principles, routine procedures and regulatory/permit requirements to the loading and unloading of goods/cargo.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

### ELEMENT

### PERFORMANCE CRITERIA

#### 1 Load and unload goods/cargo

- 1.1 Load characteristics are identified and taken into account when determining appropriate loading and unloading procedures
- 1.2 Dangerous or hazardous goods are identified and handled in accordance with the Australian Dangerous Goods (ADG) Code and other relevant regulations/permit requirements
- 1.3 Load is packed/unpacked to make safe and effective use of available spaces
- 1.4 Goods/cargo are loaded in accordance with relevant mass and loading regulations and workplace procedures
- 1.5 Lifting aids and appliances are selected and used to aid loading procedures in compliance with workplace procedures and safety legislation
- 1.6 Unloading activities are conducted in a safe and efficient manner taking into account suitable locations, stowage, safe use of equipment and the balance of the remaining load
- 1.7 Goods requiring special handling and/or documentation are identified and appropriate procedures followed
- 1.8 Relocated material is restacked appropriate for the transport method, safe height, weight loading, size and crushability of the goods

#### 2 Secure and protect load

- 2.1 The distribution of the load is checked to ensure that it is even, legal and within safe working capacity
- 2.2 Load is checked to ensure that dangerous goods and hazardous substances are appropriately segregated in accordance with the ADG Code
- 2.3 Load is secured using the correct load restraint and protection equipment for different loads, carrying and storage conditions
- 2.4 The load is protected in accordance with legal and workplace safety requirements

#### 3 Complete documentation

- 3.1 The load is inspected and checked for security to travel in accordance with relevant regulations/permit requirements and the ADG Code where applicable
- 3.2 All required documentation for the goods is completed in accordance with workplace requirements including the ADG Code where applicable

## Required Skills and Knowledge

## REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

### Required knowledge:

- Relevant Australian standards and regulations including state/territory mass and loading regulations
- National Load Restraint Guide
- Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances
- OH&S procedures and guidelines concerning the lifting and movement of loads
- Risks when loading and unloading goods/cargo and related precautions to control the risk
- Security awareness requirements when loading and unloading vehicles and in particular the recognition, isolation and reporting of suspicious cargo and goods
- Workplace procedures and policies for the loading and unloading of goods/cargo
- Housekeeping standards procedures required in the workplace
- Methods of securing a load
- Site layout and obstacles
- Problems that may arise when loading and unloading goods and cargo and actions that should be taken to prevent or solve them

### Required skills:

- Communicate effectively with others when loading and unloading goods and cargo
- Read and interpret instructions, procedures, information, signs and labels relevant to the loading and unloading of goods and cargo
- Identify containers and goods coding, ADG and IMDG markings and, where applicable, emergency information panels and take appropriate action
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to the loading and unloading of goods and cargo
- Operate electronic communication equipment to required protocol
- Estimate the size, shape and special requirements of loads and take appropriate action
- Work collaboratively with others when loading and unloading goods and cargo
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may arise when loading and unloading goods and cargo in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected situations that may occur when loading and unloading goods and cargo
- Apply precautions and required action to minimise, control or eliminate hazards that may exist

**Required skills:**

- during the loading and unloading of goods and cargo
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in cargo and equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards

**Evidence Guide****EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills
  - relevant legislation and workplace procedures
  - other relevant aspects of the range statement

**Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace procedures, regulations, codes of practice and

## EVIDENCE GUIDE

	operation manuals
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment of this unit must be undertaken by a registered training organisation</li> <li>As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests</li> <li>Practical assessment must occur: <ul style="list-style-type: none"> <li>through activities in an appropriately simulated environment at the registered training organisation, and/or</li> <li>in an appropriate range of situations in the workplace</li> </ul> </li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Operations may be conducted:	<ul style="list-style-type: none"> <li>in a range of work environments</li> <li>by day or night</li> </ul>
Customers may be:	<ul style="list-style-type: none"> <li>internal or external</li> </ul>
Workplaces may comprise:	<ul style="list-style-type: none"> <li>large, medium or small worksites</li> </ul>
Work may be conducted in:	<ul style="list-style-type: none"> <li>restricted spaces</li> <li>exposed conditions</li> <li>controlled or open environments</li> </ul>
Goods/cargo to be loaded or unloaded may:	<ul style="list-style-type: none"> <li>require special precautions</li> </ul>
Loads to be shifted may be:	<ul style="list-style-type: none"> <li>irregularly shaped</li> <li>packaged or unpackaged</li> <li>labelled or unlabelled</li> <li>palletted or unpalletted</li> </ul>
Hazards in the work area may include exposure to:	<ul style="list-style-type: none"> <li>chemicals</li> <li>dangerous or hazardous substances</li> <li>movements of equipment, goods and materials</li> </ul>
Personnel in the work area may include:	<ul style="list-style-type: none"> <li>workplace personnel</li> <li>site visitors</li> <li>contractors</li> </ul>

## RANGE STATEMENT

Communication in the work area may include:	<ul style="list-style-type: none"><li>• official representatives</li><li>• phone</li><li>• electronic data interchange</li><li>• fax</li><li>• email</li><li>• internet</li><li>• radio</li><li>• oral, aural or signed communications</li></ul>
Loading operations may be carried out:	<ul style="list-style-type: none"><li>• manually</li><li>• with the aid of lifting equipment and/or appliances</li></ul>
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	<ul style="list-style-type: none"><li>• company procedures</li><li>• enterprise procedures</li><li>• organisational procedures</li><li>• established procedures</li></ul>
Personal protective equipment may include:	<ul style="list-style-type: none"><li>• gloves</li><li>• safety headwear and footwear</li><li>• safety glasses</li><li>• two-way radios</li><li>• high visibility clothing</li></ul>
Information/documents may include:	<ul style="list-style-type: none"><li>• goods identification numbers and codes, including ADG and IMDG markings and HAZCHEM signs</li><li>• manifests, bar codes, goods and container identification</li><li>• manufacturers specifications for equipment/tools</li><li>• workplace procedures and policies for the loading and unloading of goods/cargo</li><li>• ADG Code and associated regulations</li><li>• supplier and/or client instructions</li><li>• material safety data sheets</li><li>• EPGs and Initial Response Guide (HB76:1998 or equivalent)</li><li>• codes of practice including the National Standards for Manual Handling and the Industry Safety Code</li><li>• award, enterprise bargaining agreement, other industrial arrangements</li><li>• relevant Australian standards and certification requirements</li><li>• quality assurance procedures</li><li>• emergency procedures</li><li>• Load Restraint Guide</li></ul>
Applicable regulations and	<ul style="list-style-type: none"><li>• relevant Australian standards and regulations including</li></ul>

**RANGE STATEMENT**

legislation may include

- state/territory mass and loading regulations
- Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances, including:
  - Australian and International Dangerous Goods Codes
  - Australian Marine Orders and the International Maritime Dangerous Goods Code
  - IATA Dangerous Goods by Air regulations
  - Australian and International Explosives Codes
- relevant state/territory environmental protection legislation
- relevant state/territory OH&S legislation

**Unit Sector(s)**

Not Applicable

**Competency Field**

**Competency Field**                      D - Load Handling

# **TLID2013A Move materials mechanically using automated equipment**

## **Modification History**

Not Applicable

## **Unit Descriptor**

### **Unit Descriptor**

This unit involves the skills and knowledge required to move materials mechanically using automated equipment such as automatic guided vehicles, tow motors, high level order pickers, conveyor systems, and mechanised pallet movers. This includes selecting appropriate mechanical moving equipment (where relevant), moving materials/goods in accordance with operational requirements, checking condition of materials/goods and completing all required documentation. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

## **Application of the Unit**

### **Application of the Unit**

Work must be carried out in compliance with the relevant OH&S regulations concerning the movement of materials mechanically using automated equipment.

Work is performed under limited or minimum supervision. It involves the application of the basic principles and routine procedures for the safe movement of materials mechanically using automated equipment.

## **Licensing/Regulatory Information**

Refer to Unit Descriptor

## **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Select load moving equipment</b>	<p>1.1 The mechanised handling equipment, the route to be taken and procedures to be used are selected appropriate to the characteristics of the goods</p> <p>1.2 Dangerous goods and hazardous materials are identified and handled in accordance with codes of practice, OH&amp;S requirements and workplace procedures</p>
<b>2 Move goods</b>	<p>2.1 Goods are moved using the selected materials handling equipment in accordance with occupational health and safety regulations, manufacturers instructions and company procedures</p> <p>2.2 Problems in the movement of goods and materials using the automated equipment are identified and are reported in accordance with workplace procedures</p>
<b>3 Check goods and complete documentation</b>	<p>3.1 Moved goods are inspected for possible damage during transit/movement and appropriate action is taken</p> <p>3.2 All required documentation is completed for the tracking of the moved goods in accordance with company requirements</p>

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Regulations relevant to the use of automated equipment to move materials mechanically
- Relevant OH&S and environmental protection procedures and guidelines
- Workplace procedures and policies for the use of automated equipment to move materials mechanically
- Focus of operation of work systems, equipment, management and site operating systems for the use of automated equipment to move materials mechanically
- The purpose, characteristics, capabilities, requirements and limitations of the automated materials moving equipment
- Problems that may occur during the use of automated equipment to move materials mechanically and appropriate action that can be taken to resolve the problems
- Risks when using automated equipment to move materials and related precautions to control the risks
- Documentation and record requirements

## REQUIRED KNOWLEDGE AND SKILLS

- Housekeeping standards procedures required in the workplace
- Site layout and obstacles

### Required skills:

- Communicate effectively with others when using automated equipment to move materials mechanically
- Read and interpret instructions, procedures, information and signs relevant to the use of automated equipment to move materials mechanically
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to the use of automated equipment to move materials mechanically
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when using automated equipment to move materials mechanically
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions that may arise when using automated equipment to move materials mechanically in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unplanned events
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Monitor performance of automated equipment and take appropriate action where required
- Ensure servicing of automated equipment in terms of maintenance schedule and standard operating procedures
- Check and replenish fluids (where applicable) and carry out lubrication processes in the course of work activities

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

#### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills
  - relevant legislation and workplace procedures
  - other relevant aspects of the range statement

#### **Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

#### **Method of assessment**

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
  - through activities in an appropriately simulated environment at the registered training organisation, and/or
  - in an appropriate range of situations in the workplace

## Range Statement

## RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

- The operations may be conducted:
- in a range of work environments
  - by day or night
  - in a range of typical weather conditions
- Customers may be:
- internal or external
- Workplaces may comprise:
- large, medium or small worksites
- Work may be conducted in:
- restricted spaces
  - exposed conditions
  - controlled or open environments
- Mechanised equipment may include a range of goods and materials handling equipment such as:
- automatic guided vehicle
  - tow motors
  - high level order picker
  - conveyor system
  - mechanised pallet mover
- Personal protective equipment may include:
- gloves
  - safety headwear and footwear
  - safety glasses
  - two-way radios
  - high visibility clothing
- Hazards in the work area may include exposure to:
- chemicals
  - dangerous or hazardous substances
  - movements of equipment, goods and materials
  - moving and rotating equipment and vehicles
- Personnel in the work area may include:
- workplace personnel
  - site visitors
  - contractors
  - official representatives
- Communication in the work area may include:
- phone
  - electronic data interchange
  - fax
  - email
  - internet
  - radio
  - oral, aural or signed communications
- Depending on the type of organisation concerned and the local terminology used, workplace
- company procedures
  - enterprise procedures
  - organisational procedures

## RANGE STATEMENT

procedures may include:

- established procedures

Information/documents may include:

- goods identification numbers and codes
- manifests, bar codes, goods and container identification
- manufacturers instructions concerning the use and servicing of automated mechanical equipment
- workplace procedures and policies
- supplier and/or client instructions
- material safety data sheets
- codes of practice including the National Standards for Manual Handling and the Industry Safety Code
- relevant legislation, regulations and related documentation
- award, enterprise bargaining agreement, other industrial arrangements
- standards and certification requirements
- quality assurance procedures
- emergency procedures
- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation
- workplace relations regulations
- workers compensation regulations
- ADG Code and regulations

Applicable regulations and legislation may include:

## Unit Sector(s)

Not Applicable

## Competency Field

Competency Field

D - Load Handling

## **TLID3011A Conduct specialised forklift operations**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to operate a forklift with specialised attachments or all-terrain equipment, including checking attachments and worksite for suitability, selecting the type of forklift and accessories for required load shifting tasks, and shifting load and completing work in accordance with operational requirements. Assessment of this unit will usually be undertaken within a licensing examination conducted by, or under the authority of, the relevant state/territory OH&S authority. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Specialised operation of a forklift must be carried out in compliance with the licence requirements and regulations of the relevant state/territory authority.

Specialised operation of a forklift is performed under some supervision, generally within a team environment. It involves the application of equipment operation principles and procedures to maintain the safety and specialised operation of a forklift in a wide variety of operational contexts.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## Employability Skills Information

**Employability Skills**                      This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Check attachments and worksite for suitability</b>	<ul style="list-style-type: none"><li>1.1 Suitable work site is selected for operations</li><li>1.2 Work area is checked for overhead obstructions and proximity to service delivery lines</li><li>1.3 Barriers or warning signs are erected in areas subject to passing traffic</li><li>1.4 Attachments and platforms are securely fixed to carriage or tines</li><li>1.5 Personnel support platforms are inspected to ensure compliance with the relevant Australian Standard</li></ul>
<b>2 Select type of forklift and accessories for the required workplace task</b>	<ul style="list-style-type: none"><li>2.1 Special equipment, accessories or attachments are identified to match load characteristics and work requirements</li><li>2.2 Appropriate specialised equipment is selected</li><li>2.3 Existing attachments are removed and stored according to workplace procedures</li><li>2.4 Specialised equipment is fitted according to manufacturers instructions and workplace procedures</li><li>2.5 Designated staff are notified regarding specialist operations</li></ul>
<b>3 Shift load and complete work</b>	<ul style="list-style-type: none"><li>3.1 Equipment is operated within safe working limits and to maximise efficiency of operations</li><li>3.2 Load is lifted, carried and set down in accordance with workplace and manufacturers procedures and regulatory requirements</li><li>3.3 Documentation is completed reporting any damage or faults to goods or equipment</li><li>3.4 Specialist equipment and forklift are returned to appropriate storage/parking area</li></ul>

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Relevant duty of care requirements pertaining to the specialised operation of a forklift
- Relevant OH&S and environmental procedures and regulations
- Workplace operating procedures

## REQUIRED KNOWLEDGE AND SKILLS

- Forklift controls, instruments and indicators and their use
- Types of forklift accessories and ancillary equipment, their purposes and procedures for their use
- Handling procedures for forklifts involved in specialised operations
- Procedures to be followed in the event of an operational emergency
- Operating hazards and related defensive driving and hazard control techniques
- Engine power management and safe operating strategies
- Efficient driving techniques
- Pre-operational checks carried out on forklift and accessories and related action
- Site layout and obstacles
- Principles of stress management when driving a forklift

### Required skills:

- Communicate effectively with others when conducting specialised forklift operations
- Read and interpret instructions, procedures, information and signs relevant to specialised forklift operations
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to specialised forklift operations
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when conducting specialised forklift operations
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions that may arise when conducting specialised forklift operations in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may occur when conducting specialised forklift operations
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during specialised forklift operations
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Apply fatigue management knowledge and techniques
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S

**Required skills:**

standards

- Identify points of balance and safe lifting positions on a range of loads when operating a forklift (including accessories)
- Monitor performance of equipment
- Service equipment in terms of maintenance schedule and standard operating procedures
- Check and replenish fluids and carry out lubrication processes in the course of work activities

**Evidence Guide****EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills
  - relevant legislation and workplace procedures
  - other relevant aspects of the range statement

**Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

**Method of assessment**

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be

## EVIDENCE GUIDE

conducted through appropriate written/oral tests

- Practical assessment must occur:
  - through activities in an appropriately simulated environment at the registered training organisation, and/or
  - in an appropriate range of situations in the workplace

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Types of forklift may include:

- counterbalance trucks
- reach trucks
- pallet trucks
- container-handling heavy forklifts
- vacuum
- top frame

Specialised forklift operations may be carried out in typical forklift operational situations, including:

- operations conducted at day or night
- typical weather conditions
- on the open road
- on a private road or worksite
- while at a workplace
- internal or external

Customers may be:

Workplaces may comprise:

- large, medium or small worksites

Specialised forklift may be used to assist in a range of workplace tasks, including:

- stock/goods/container handling
- loading and unloading vehicles
- stacking stock and goods
- lifting and moving equipment
- transporting materials and goods in a workplace

Work may be conducted in:

- restricted spaces
- exposed conditions
- controlled or open environments

Loads to be shifted may require:

- special precautions

Specialised forklift operations

- spikes

## RANGE STATEMENT

may involve the use of a range of attachments and accessories, including:

- drum carriers
- bale carriers
- tines
- personnel carriers
- high reaching
- pantograph
- jibs
- paper clamps
- hooks
- side lifters

Loads to be shifted may be:

- irregularly shaped
- packaged or unpackaged
- labelled or unlabelled
- palletted or unpalletted
- containerised

Personnel in the work area may include:

- workplace personnel
- site visitors
- contractors
- official representatives

Forklift operational procedures may include:

- starting a forklift (including pre-start checks)
- steering and manoeuvring a forklift
- accelerating and braking
- positioning and stopping a forklift
- reversing a forklift
- operating forklift controls, instruments and indicators
- using defensive driving techniques
- managing engine performance

Pre-operational checks may include but are not limited to:

- visual checking of forklift and its associated accessories and equipment
- checking and topping up of fluid levels
- checks of tyres
- checks of operation of forklift lights and indicators
- checks of brakes

Post-operational checks may include but are not limited to:

- parking in a safe place
- shutting down forklift
- lowering all equipment
- visually checking for faults or damage

Hazards may include (examples only):

- wet and iced operating surfaces
- oil on operating surface
- faulty brakes

## RANGE STATEMENT

Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	<ul style="list-style-type: none"><li>• workplace obstacles and other operational equipment and vehicles</li><li>• damaged loads and pallets</li><li>• other personnel in work area</li><li>• company procedures</li><li>• enterprise procedures</li><li>• organisational procedures</li><li>• established procedures</li></ul>
Personal protective equipment may include:	<ul style="list-style-type: none"><li>• gloves</li><li>• safety headwear and footwear</li><li>• safety glasses</li><li>• two-way radios</li><li>• high visibility clothing</li></ul>
Information/documents may include:	<ul style="list-style-type: none"><li>• goods identification numbers and codes, including IMDG markings and HAZCHEM signs</li><li>• manifests, bar codes, picking slips, merchandise transfers, stock requisitions, goods and container identification</li><li>• Australian Standard 2359 - Industrial Truck Code</li><li>• manufacturers specifications for forklift and associated accessories and equipment</li><li>• operations and service record book or log</li><li>• workplace procedures and policies for the operation of forklifts</li><li>• supplier and/or client instructions</li><li>• material safety data sheets</li><li>• regulatory requirements concerning the use of forklifts</li><li>• award, enterprise bargaining agreement, other industrial arrangements</li><li>• standards and certification requirements</li><li>• quality assurance procedures</li><li>• emergency procedures</li></ul>
Applicable procedures and codes may include:	<ul style="list-style-type: none"><li>• relevant state/territory regulations pertaining to the operation of forklifts</li><li>• relevant codes and standards, including Australian Standard 2359 - Industrial Truck Code</li><li>• relevant state/territory OH&amp;S legislation</li><li>• relevant state/territory fatigue management regulations</li><li>• relevant state/territory environmental protection legislation</li></ul>

## Unit Sector(s)

Not Applicable

## Competency Field

Competency Field                      D - Load Handling

## **TLIL4005A Apply conflict/grievance resolution strategies**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to apply conflict resolution strategies to resolve grievances that may occur in the course of work, including identifying potential conflict situations, implementing appropriate conflict resolution strategies, and using effective interpersonal skills. Grievances and conflict situations may include those between employees in the workplace, between employees and managers, as well as grievances that might be raised by customers. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### **Application of the Unit**

#### **Application of the Unit**

Work involves discretion and judgement for self and others in management and resolution of conflicts and grievances both internal and external to the workplace.

Work is performed under minimum supervision with general guidance on progress and outcomes of work. It involves application of conflict/grievance resolution strategies in conflict situations that may arise amongst personnel both internal to and external to the workplace.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Identify potential conflict situations</b>	1.1 Signs, stages and possible causes of conflict/grievance are identified
<b>2 Implement conflict resolution strategies</b>	2.1 Factors and issues relevant to conflict/grievance are clarified 2.2 Strategies for dealing with conflict/grievance situations are developed 2.3 Options for resolution of the conflict/grievance are identified which allow for constructive responses to be negotiated and enable established relationships to continue 2.4 Strategies are implemented for the resolution of the source of conflict 2.5 Outcomes of the process are monitored to ensure objectives continue to be met
<b>3 Use effective interpersonal skills</b>	3.1 Effective verbal and non-verbal communication is used during negotiations, including body language, questioning, language style, active listening and reflection 3.2 Feedback is given assertively and received non-defensively during negotiations

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Relevant and regulatory and code requirements
- Relevant OH&S and environmental protection policies and procedures
- Workplace protocols and procedures for the identification and resolution of conflicts/grievances
- Relevant workplace business marketing policies and practices, including requirements for the maintenance of security and confidentiality
- Signs, stages and possible causes of conflict in the workplace
- Options for constructive responses to typical conflict/grievance situations
- Typical problems that can occur when applying conflict/grievance resolution strategies and related appropriate action that can be taken

#### Required skills:

**Required skills:**

- Communicate effectively with others when applying conflict and grievance resolution strategies
- Negotiate effectively with others when applying conflict and grievance resolution strategies
- Read and interpret instructions, procedures, information and signs relevant to the application of conflict and grievance resolution strategies
- Interpret and follow operational instructions and prioritise work
- Gather, record and convey simple and routine work-related information
- Complete documentation related to the application of conflict and grievance resolution strategies
- Operate electronic communication equipment to required protocol
- Identify existing and potential conflicts/grievances
- Participate in small informal work groups
- Apply interpersonal skills
- Work collaboratively with others when applying conflict and grievance resolution strategies
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may arise when applying conflict and grievance resolution strategies in accordance with regulatory requirements and workplace procedures
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Select and appropriately apply technology, information systems and procedures to complete workplace tasks
- Work systematically with required attention to detail

**Evidence Guide****EVIDENCE GUIDE**

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills

## EVIDENCE GUIDE

<b>Context of and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• relevant legislation and workplace procedures</li> <li>• other relevant aspects of the range statement</li> <li>• Performance is demonstrated consistently over a period of time and in a suitable range of contexts</li> <li>• Resources for assessment include:               <ul style="list-style-type: none"> <li>• a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or</li> <li>• access to an appropriate range of relevant operational situations in the workplace</li> </ul> </li> <li>• In both real and simulated environments, access is required to:               <ul style="list-style-type: none"> <li>• relevant and appropriate materials and equipment, and</li> <li>• applicable documentation including workplace procedures, regulations, codes of practice and operation manuals</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment of this unit must be undertaken by a registered training organisation</li> <li>• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests</li> <li>• Practical assessment must occur:               <ul style="list-style-type: none"> <li>• through activities in an appropriately simulated environment at the registered training organisation, and/or</li> <li>• in an appropriate range of situations in the workplace</li> </ul> </li> </ul>

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The workplace environment may involve twenty-four hour operation and may include:	<ul style="list-style-type: none"> <li>• single and multi-site locations</li> <li>• large, medium and small companies</li> </ul>
Services, products, risks, work systems and requirements may:	<ul style="list-style-type: none"> <li>• potentially vary across different sections of the workplace</li> </ul>

## RANGE STATEMENT

Operations involve:

- internal and external customer contact and coordination

Conflicts/grievances may arise at all levels of the organisation in a range of possible situations including:

- amongst internal personnel
- between internal personnel and external personnel such as customers, suppliers, contractors, equipment manufacturers, etc.
- between external personnel and the organisation
- between internal personnel and management

Consultative processes may involve:

- other employees and supervisors
- management
- customers/clients
- suppliers of goods/materials
- manufacturers of equipment
- contractors
- relevant authorities
- union representatives
- OH&S specialists
- other maintenance, professional or technical staff

Communications systems may involve:

- face-to-face conversations and meetings
- telephone
- fax
- email
- mail

Depending on the type of organisation concerned and the local terminology used, workplace plans/procedures may include:

- company plans/procedures
- enterprise plans/procedures
- organisational plans/procedures
- established plans/procedures

Information/documentation may include:

- workplace procedures for the resolution of conflicts/grievances
- records of action to resolve conflicts/grievances and documentation of agreements reached
- job specifications
- conditions of service, relevant legislation, regulations and related documentation
- award, enterprise bargaining agreement, workers compensation, and other industrial arrangements
- relevant codes of practice including the national standards for manual handling and the industry safety code
- supplier and/or client instructions
- manifests, bar codes, goods and container identification
- goods identification numbers and codes

**RANGE STATEMENT**

Applicable regulations and legislation may include:

- manufacturers specifications
- material safety data sheets
- relevant Australian standards and certification requirements
- quality assurance procedures
- emergency procedures
- relevant regulations, standards and codes of practice
- trading regulations relevant to business operations
- relevant Australian and state/territory OH&S legislation
- environmental protection regulations
- hazardous substances and dangerous goods codes
- relevant Australian standards and certification requirements
- licence, patent or copyright arrangements

**Unit Sector(s)**

Not Applicable

**Competency Field**

**Competency Field** L - Resource Management

## TLILIC2001A Licence to operate a forklift truck

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit Descriptor</b>	This unit specifies the outcomes required for the operation of a powered industrial truck equipped with a mast and an elevating load carriage to which is attached a pair of fork arms or other attachment, for licensing purposes. This definition also includes a truck on which the operator is raised with the attachment for order-picking.
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### Application of the Unit

<b>Application of the Unit</b>	<p>THIS UNIT REQUIRES THE OPERATOR TO BE ABLE PLAN THE WORK, CONDUCT ROUTINE CHECKS ON THE FORKLIFT, SHIFT LOADS IN A SAFE MANNER, AND SHUT DOWN AND SECURE THE EQUIPMENT AFTER THE COMPLETION OF OPERATIONS.</p> <p>This unit is based on the National Standard for Licensing Persons Performing High Risk Work.</p> <p>This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.</p>
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### Licensing/Regulatory Information

Refer to Unit Descriptor

### Pre-Requisites

Not Applicable

## Employability Skills Information

Employability Skills	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Not Applicable

## Elements and Performance Criteria

<b>ELEMENT</b> <i>Elements describe the essential outcomes of a unit of competency.</i>	<b>PERFORMANCE CRITERIA</b> <i>Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.</i>
1. Plan work	1.1 Potential workplace <b><i>hazards</i></b> are identified 1.2 <b><i>Hazard control measures</i></b> are identified consistent with <b><i>appropriate standards</i></b> to ensure the safety of personnel and equipment 1.3 Appropriate <b><i>forklift</i></b> truck is selected according to the load and workplace conditions 1.4 Working area is inspected to determine appropriate path of movement for loads and forklift truck 1.5 <b><i>Communication methods</i></b> are identified according to <b><i>procedures</i></b>
2. Conduct routine checks	2.1 Forklift is visually checked for any damage or defects 2.2 All <b><i>signage and labels</i></b> are visible and legible according to the <b><i>appropriate standard</i></b> 2.3 All controls are located and identified 2.4 <b><i>Pre-start operational checks</i></b> are carried out according to <b><i>procedures</i></b> 2.5 <b><i>Forklift</i></b> is started according to <b><i>procedures</i></b> and checked for any abnormal noise  2.6 <b><i>Post-start operational checks</i></b> are carried out according to <b><i>procedures</i></b> 2.7 All forklift functions and safety devices are tested to their maximum according to <b><i>procedures</i></b> 2.8 Defects and damage are reported and recorded according to <b><i>procedures</i></b> , and appropriate action is taken
3. Shift load	3.1 The weight of load is assessed to ensure compliance with <b><i>forklift</i></b> truck data plate specifications 3.2 Appropriate <b><i>hazard prevention/control measures</i></b> are implemented and communicated with personnel in the work area 3.3 <b><i>Forklift</i></b> is operated at a safe speed and according to <b><i>procedures</i></b> 3.4 Loads are moved and placed to ensure stability of material and avoidance of hazards

	<p>3.5 Load movement is monitored constantly ensuring safety to personnel and load, and structural stability</p> <p>3.6 <i>Unplanned and/or unsafe situations</i> are responded to in line with <i>procedures</i></p>
4. Shut down and secure forklift truck	<p>4.1 <i>Forklift</i> truck is parked to avoid hazards</p> <p>4.2 Forklift is <i>shut down</i> according to <i>procedures</i></p> <p>4.3 Routine post-operational forklift checks are carried out according to <i>procedures</i></p> <p>4.4 Forklift is secured to prevent unauthorised access/use</p> <p>4.5 All defects and damage are reported and recorded according to <i>procedures</i>, and appropriate action is taken</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

*This describes the essential skills and knowledge and their level required for this unit.*

#### Required skills:

- Accurately interpret information relating to conducting forklift truck operations (e.g. procedures)
- Safely conduct forklift truck operations including all functions to the maximum height and load capacity
- Identify hazards associated with the operation of the forklift truck, assess risks and put into place effective hazard prevention/control measures for those hazards identified
- Use communication skills at a level sufficient to communicate with other site personnel (e.g. receive and interpret work instructions, safety information, emergency procedures)
- Drive forklift with load in forward and reverse, maintaining visibility
- Verify problems and equipment faults and demonstrate appropriate response procedures

#### Required knowledge:

- Methodology of determining the weight of a load
- Commonwealth, state or territory OH&S legislation, standards relevant to the safe operation for the forklift trucks
- Understanding of forklift characteristics and capabilities (including use of load data plates)
- Understanding of the hierarchy of hazard identification and control
- Organisational and workplace standards, requirements, policies and procedures for

**REQUIRED SKILLS AND KNOWLEDGE**

- conducting operations for the crane class
- Procedures for the recording, reporting and maintenance of workplace records and information
- Forklift truck operations and safe operating techniques
- Typical routine problems encountered in the operation of the crane and equipment and adjustments required for correction

**Evidence Guide****EVIDENCE GUIDE**

*The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for the Training Package.*

**Overview of assessment**

- Successful assessment of this unit meets the competency requirement of the National Standard for Licensing Persons Performing High Risk Work.
- State/territory OH&S regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OH&S matters.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- Compliance with OH&S licensing legislation.
- Communicate and work safely with others in the work area.
- Identify hazards associated with the operation of the forklift truck and put in place effective hazard controls for those hazards identified.
- Conduct pre-start-up, operational, moving loads and shut down and secure checks of the forklift truck according to procedures.
- Operate the forklift truck and move loads safely, including driving and manoeuvring, picking up and placing of loads at various stack heights.
- Drive forklift truck with load in forward and reverse, maintaining visibility.

**Context of and specific resources for assessment**

- Assessment of the safe application of knowledge and skills to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument.

**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting.</li> <li>Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.</li> <li>Applicants must have access to: <ul style="list-style-type: none"> <li>Personal Protective Equipment (PPE) for the purpose of the Performance Assessment</li> <li>associated equipment appropriate to forklift truck operations</li> <li>suitable loads as described by the endorsed Assessment Instrument</li> <li>manufacturers specifications</li> <li>appropriate forklift truck in a safe condition.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>Assessment must be conducted using the endorsed Assessment Instrument. These Instruments provide instruction on their application.</li> <li>The use of '<b>simulators</b>' in the assessment of this unit of competency is <b>not acceptable</b>.</li> <li>Assessment may be in conjunction with the assessment of other units of competency.</li> <li>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.</li> <li>Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> </ul>
<b>Guidance information for assessment</b>	<ul style="list-style-type: none"> <li>Further information about endorsed Assessment Instruments may be obtained from state/territory OH&amp;S regulators.</li> </ul>

**Range Statement****RANGE STATEMENT**

*The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.*

<b>RANGE STATEMENT</b>	
<b>Hazards</b>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• ground conditions (e.g. condition of pavement, slopes)</li> <li>• overhead hazards (e.g. powerlines, service pipes)</li> <li>• insufficient lighting</li> <li>• traffic (e.g. pedestrians, vehicles, other plant)</li> <li>• weather (e.g. wind, lightning, rain)</li> <li>• forklift instability (e.g. overloading, poor load placement, irregular loads)</li> <li>• other hazards (e.g. dangerous materials)</li> </ul>
<b>Hazard control measures</b>	<p>Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls</p> <p>It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk:</p> <ol style="list-style-type: none"> <li>1 elimination</li> <li>2 substitution</li> <li>3 isolation</li> <li>4 engineering control measures</li> <li>5 using safe work practices</li> <li>6 personal protective equipment</li> </ol>
<b>Appropriate standards</b>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• legislation</li> <li>• Australian standards</li> <li>• manufacturer's specifications</li> <li>• industry standards (where applicable)</li> </ul>
<b>Forklift truck</b>	<p>May include but not be limited to:</p> <ul style="list-style-type: none"> <li>• counterbalanced</li> <li>• reach trucks</li> <li>• rough terrain</li> <li>• internal combustion petrol, diesel, gas</li> <li>• electric</li> </ul>
<b>Communications methods</b>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• verbal and non-verbal language</li> <li>• written instructions</li> <li>• signage</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• hand signals</li> <li>• listening</li> <li>• questioning to confirm understanding</li> <li>• appropriate worksite protocol</li> </ul>
<b>Procedures</b>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• manufacturer's guidelines (instructions, specifications or checklists)</li> <li>• industry operating procedures</li> <li>• workplace procedures (work instructions, operating procedures, checklists)</li> </ul>
<b>Pre-start operational checks</b>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• safety devices fitted where appropriate</li> <li>• forklift data plate fitted and interpreted</li> <li>• logbook, handbook or operating manuals available</li> <li>• external visual check including, evidence of damage, leaks, visual evidence of structural weaknesses (including paint separation or stressed welds) is carried out</li> <li>• forklift attachment is checked for security</li> <li>• approved modifications and/or attachments fitted to manufacturer's specifications (e.g. as per forklift or attachment data plate) are identified</li> <li>• checks for adaptations or modifications outside manufacturer's specifications (e.g. not listed on the forklift or attachment data plate) are carried out</li> <li>• maintenance logbook/records checked</li> </ul>
<b>Post-start operational checks</b>	<p>May include checks of the forklift truck and equipment after start-up to ensure:</p> <ul style="list-style-type: none"> <li>• hazard warning systems (for example lights and horns), are functional</li> <li>• attachment movements and control functions are smooth and comply with operating requirements</li> <li>• steering, transmission and brake functions comply with operating requirements</li> </ul>
<b>Hazard prevention/control measures</b>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• barricades and traffic control</li> <li>• safety tags on electrical switches/isolators</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>insulated powerlines</li> <li>safety observer used inside exclusion zone</li> <li>disconnected power</li> <li>pedestrian control (barricades, signs, etc.)</li> <li>excavation safeguards</li> <li>movement of obstructions</li> <li>personal protective equipment</li> <li>adequate illumination</li> </ul>
<b>Unplanned and/or unsafe situations</b>	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>failure/loss of control (e.g. brakes and steering)</li> <li>failure of equipment (e.g. hydraulic system)</li> <li>environmental condition</li> </ul>
<b>Shut down</b>	<p>May include, but is not limited to:</p> <ul style="list-style-type: none"> <li>parking in a suitable location away from dangerous areas</li> <li>fork arms are correctly positioned (tips down, tilted forward, lowered to ground)</li> <li>appropriate transmission/gear is selected for parking (relevant to transmission type)</li> <li>hand/parking brake is applied</li> <li>engine power is turned off</li> <li>ignition key is removed (if applicable)</li> <li>LPG gas cylinder valve is shut off (where fitted)</li> <li>securing equipment against unauthorised operation</li> <li>securing the site</li> <li>ensuring access ways are clear</li> <li>identifying and segregating defective equipment and reporting to authorised personnel</li> <li>batteries are connected to the charger (if applicable)</li> </ul>

## Unit Sector(s)

Not Applicable